



First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

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EDITORIAL COMMENT

THERE has been quite a crop of unpleasant rumours floating about regarding the future of the R.A.F., and it is just as well that prompt steps have been taken to deny the most pernicious of them. In the first place, it has been stated categorically—and the report apparently emanated from an authoritative source—that it was in contemplation to break up the R.A.F. and restore the complete control to the Admiralty and the War Office and to run the Air Services on a pre-War basis of organisation and command. In an obviously inspired communiqué *The Times* states that it is authoritatively informed there is not the slightest foundation for the report in question. On the contrary, the War Minister is convinced of the necessity of maintaining the Royal Air Force as a separate service, and has no idea whatsoever of placing the military arms under the separate control of the Admiralty and the War Office.

R.A.F. Policy

This is definite enough for the time being, but we think it would be much better and would tend to allay the very large amount of misgiving that exists in the R.A.F. and outside its ranks, if Mr. Churchill would take the earliest possible opportunity of making a statement on the subject. After all, he is not the whole Government, and although we believe him to be absolutely sound on the question of continuing the R.A.F. as a completely separate Service, it is not altogether so certain that he has the whole of his colleagues in the Cabinet with him. What is clearly necessary is a definite enunciation of the Government's policy, and although Mr. Churchill as a Minister of the Crown certainly speaks with authority, it does not follow that even a Cabinet Minister is always right in his interpretation of the policy of the whole Government. In any case, these recurrent rumours are doing no good to the Service, and they ought to be confirmed or denied without another moment's delay.

The Department of Civil Aviation

Another report that has gained considerable currency is to the effect that it has been decided to place the Department of Civil Aviation under the control of Sir Eric Geddes in his capacity of Minister of Ways and Communications. We have not the shadow of a doubt that Sir Eric would take over the Department with all the pleasure in the world if he were given the chance. Indeed, it is to be doubted if he would decline to undertake the control of the navigation of the canals of Mars if he were asked, but we should be very sorry indeed to see the development of civil aviation placed at the mercy of a Minister who is not only a typical bureaucrat but has not the slightest knowledge of the requirements of aerial transport in its infant stages. It is an open secret that at one time it was seriously proposed to place civilian aviation under the control of the Ministry of Ways and Communications, but the reasons against such a course were so strong that they prevailed at the eleventh hour, and it is now possible to say that the idea has been definitely abandoned.

Again, it seems that a definite statement of policy should be made in order that the recurrence of these damaging rumours may be prevented. They give rise to a very great amount of concern and anxiety and do no good to anyone. Yet no-one in authority

seems to think it worth while to issue a denial which will finally silence the tongues of the manufacturers of these irresponsible reports. It seems to us to be a pity that they are allowed to run the length some of them manage to reach.

The Future of the Industry

It is just as well that we should face the fact that, with the War over and the present demand for aircraft cut down almost to vanishing point, the majority of the firms, particularly the smaller concerns, which have been actively engaged in the industry in war time now find themselves at the parting of the ways. For many it becomes a question of whether they will elect to stay in the industry or whether they will accept the alternative and devote the facilities for production built up during the past four years to some other more immediately remunerative business. To our way of thinking, it is as certain as anything in this world can be that there is an enormous future opening up for commercial aviation. It would be idle and foolish, however, to pretend that there is a heap of money to be made in it at the present moment. The future of commercial aviation is with those who are willing to practice patience and to carry on for the next two or three years. For them the possibilities are almost limitless, but it cannot be too clearly appreciated that patience and painstaking hard work are necessary in the highest degree.

There are certain considerations which emerge in the discussion of this problem of wait or get out, if we may put it thus. Some of the more powerful firms are so well placed financially that they can view the period of waiting with comparatively equanimity. Others, however, not so well placed, are faced with the possibility that the financial resources they have been able to accumulate during the War may be dissipated during that period and that the time when real development begins may find them without the means to reap the reward of patience and hard work. For them the present is undoubtedly a very anxious time. A great deal, not only for themselves but for the cause of British aviation, depends upon the decision they elect to take now. It is for these reasons that we deplore the present state of uncertainty of the Government in the matter of the precise form in which it is intended to "encourage and assist" the development of civil aviation. Let us make it clear that we are not criticising the authorities for the delay. We realise all the difficulties with which the Government is confronted when the solution of the problem has to be attacked, but we do think the sooner a decision can be reached the better for all.

The main question is: How best can the State aid in keeping the private constructors going until commercial aviation is able to stand on its own feet? The question is one that is not easy to answer in its entirety. The most that can be done at the moment is to give a partial indication of the manner in which encouragement can be given. For example, it will probably be found necessary that the State should inaugurate and run certain of the main aerial transport lines, at least for some initial years. We have no doubt that, if this should be the case, there will be some in authority who will desire that all aircraft used on these lines should be built in the national factories. Quite the contrary should be the case. The national factories—such of them as it is decided

to retain, if any—should be entirely confined to the construction of machines for military purposes alone, and the whole of the craft required for Government mail services should be built by private constructors. Then, as to the machines required by the R.A.F., while it is probable that a certain number will be built in Government works, the bulk of these should at first be built by contract so that the private constructors should be kept alive, all ready to fill the gaps that a sudden emergency would disclose. We are not advocating that every firm in the industry should be subsidised with orders sufficient to keep its works going at full capacity, but at least an effort should be made to give out such orders as would keep things together until commercial aviation becomes a more settled proposition than it can be to-day.

Firms May Migrate Overseas

In setting down these arguments we would not have it thought that we are thinking only of the private interests of the industry. On the contrary, although as a matter of course we are intensely interested in seeing commercial aviation a financial and industrial success, we are at the moment thinking far more of the ultimate effect on British air power if the industry is allowed to languish for the want of well-conceived assistance at the start. At the present moment we are seeing large concerns connected with shipbuilding and other important trades removing their activities overseas for reasons which are mainly connected with the labour situation in this country. We are not, it is true, aware that the same labour difficulties obtain in the aircraft industry, which is so much newer than those we have in mind. But it is worth while remembering that there are causes quite apart from labour difficulties which may drive industrial concerns abroad. It is a matter of common knowledge that there are countries, notably the larger South American Republics, which are anxious to have a hand in the development of commercial aviation but which lack the necessary technical and practical information to enable them to compete effectively. It is a simple business proposition, and supposing that sufficient encouragement is not forthcoming here to induce firms to stay in the industry, while these new countries are prepared to extend it, there is no doubt whatever as to what will happen. As a matter of fact, we know of at least one offer which has been made to a British firm to remove its business to South America, under the promise of excellent contracts and a practical monopoly of the training of the native material as pilots and constructors. We are not aware if the offer has been accepted. Probably it has not, because the conditions here have not developed to such a point as to drive constructors abroad for their business. But the moral is there for all to read if they care. It is that there must be thought out and applied as soon as possible a sane, sound and fair method of State encouragement not only of civil aviation by itself but of the firms on whom civil aviation must rely for its material resources. The matter is one of the highest national importance. Civil aviation, as we have said, can hardly be a big money-making affair for a year or two to come and, if we are to retain our place at the head of the nations, it must be the task of the State to give it that helping hand in the interval which will make all the difference between development and dissolution.

Flight—And the Men



Sir HENRY FOWLER, K.B.E., until recently Assistant Controller-General of Aircraft Production, M.O.M.

"Flight" Copyright.

The Transatlantic Flight

We are not at all certain that the element of competition inseparable from the desire to be first to accomplish the flight across the Atlantic has not been a little overdone. Quite naturally, the several competitors whose entries have been received are anxious to be able to point to the fact that a machine of the particular make in which each is interested has been the first to complete the journey from continent to continent. Undoubtedly the advertising value of such a success would be very great to the firm constructing the machine, but it seems to us there are much wider issues involved than the mere success of any particular make of machine. From the point of view of rapid development of commercial aviation the sooner the flight is accomplished the better, while from the same point of view the greater the number of unsuccessful attempts that are made the worse it will be for the future. The successful crossing must depend upon several matters, not all of which are within the control of the competitors. The one who first succeeds must, as a matter of course, be favoured with some little luck in the matter of weather. Then, there is the question of fool-proof organisation—a very expensive matter if it is carried out adequately and one that is practically beyond the power and resources of any private concern. The way the matter at large appeals to us is that there are at present some eight absolute entries for the flight, each of whom, with the exception of official competitors, is relying upon his own arrangements to get safely across. According to the law of averages governing such attempts, it is odds that not all will succeed in making the flight, nor is it any use disguising the possibility that some one or more competitors may quite well lose their lives in the attempt. If that should come about, it scarcely needs pointing out that it will be about the worst possible kind of advertisement for long-distance over-seas flying. The eyes of the whole world will be upon the event and every untoward incident of the kind we have mentioned will make more impression on the public mind than the loss of a battle in Flanders. The thing, therefore, to be done is to ensure that the attempt to cross the Atlantic shall be made as safe as possible. Mere failure to cross does not matter so much if there should be no unnecessary fatality.

Now, it will not be denied that the whole future of commercial aviation can be summed up in the terms of safety and regularity and unless the public of the world can be convinced that flying is both safe and reliable they will have none of it until it has been shown by progressive improvement that it has acquired both characteristics. Therefore, it is essential that the Atlantic flight should be regarded more as a demonstration of those general qualities than as an advertising "stunt" for any one make of machine. There is only one way in which the desired end can be achieved and that is by pooling all the resources of organisation of the various countries interested in the flight. At the present moment there are entries from America, France, Italy and Britain, while others are either on the verge of coming in or are talking about it. By such co-ordination of organisation as we suggest the flight would be rendered much more certain of accomplishment and far safer to the individual competitors than it can possibly be under the present

scheme of detached competition. Of course, it is a huge temptation to the individual to take extraordinary risks for the sake of the honour—and profit—of being first to cross the Atlantic and we know it is asking a great deal of the entrants when it is put to them that the single interest is of small moment beside the larger issues of what is best all round for the movement.

The Excess Profits Tax and Alternatives

It seems to be fairly certain that the foolish excess profits tax will, under the forthcoming Budget proposals, be drastically reduced, if it is not discarded altogether, and some other impost levied in its place. We have expressed our opinion of the present tax so often and in such strong terms that we feel there is no need to adduce further arguments against a form of tax which is iniquitous in its conception and thoroughly bad in its incidence. Even the present Chancellor of the Exchequer, who is by no means the greatest holder of the office since its creation, is of opinion that it is not a tax which can be embodied in our post-war financial policy.

There have been all sorts of alternative schemes suggested to take the place of the excess profits tax, from a wholesale levy on capital downwards, but the most dangerous, because the most specious, is that put forward by the Sheffield Chamber of Commerce Journal. This takes the form of a suggested graduated income tax assessment on profits, commencing at 2s. 6d. in the £ on a profit of 5 per cent. and increasing to 10s. in the £ on 20 per cent. and above. At first sight this does not seem unfair, nor would it be if all businesses were capitalised on a uniform basis. But, as we know, they are not. At the one end we have concerns which, carrying a load of share capital placed upon them by unsound promotion, make a great deal of money but pay small dividends. At the other, we have the business which with a small actual cash capital depends upon the brains and effort of its proprietorial and directional head for its success and pays what appears on the face of it a huge percentage on its registered capital and vastly more so on its actual cash capital. Keeping to the two extreme cases, it is perfectly obvious that the one would either pay nothing at all—the suggestion is, apparently, that nothing under 5 per cent. should pay this graduated tax at all, or a very nominal levy—while the other would be mulct in half its total profits. Of the two this would be likely to result in even greater injustice than the excess profits tax anomaly.

There is another side of the matter which appeals to us. All sorts of people are proposing all sorts of methods of raising the money to pay off the war debt, but it is in our mind that the present Government was elected to office on its distinct pledge that Germany and her Allies were to be made to pay the bill. Before either the amateur advisers of the Chancellor or the Government itself proceed to lay down the future basis of taxation to pay off the huge burden of debt incurred as a result of the war, we should like to hear what has become of those pledges and of how far they are to be redeemed. Moreover, there are other obvious sources of revenue waiting to be exploited before any such crippling impost as the excess profits tax or the alternative to which we have



ICE IN THE HARBOUR OF PERNAU.—The ships frozen in the ice were sunk by the Russians to block the entrance to the harbour.

referred are fastened permanently on the necks of long-suffering British industry.

Incredible Treasury Parsimony

After a considerable amount of pressure had been exercised upon the Treasury, late in the War it was decided to equip service aeroplanes with parachutes. The Germans had had them in use for a considerable time, and it was known that the lives of their pilots and observers had been saved by their agency when their machines were shot down. We believe that no more than 500 parachutes were arranged for by our own authorities before the cessation of hostilities, and of these only a few were fitted to machines in France. According to the Air Ministry, the device adopted has proved itself thoroughly efficient but now, it is stated, by the exercise of incredible parsimony on the part of the Treasury, which refuses to grant the money, the purchase and issue of parachutes is to be stopped.

The Government is spending millions like water on all sorts of wild-cat schemes, yet it apparently grudges a few paltry thousands to make the risks of our military pilots smaller, and to give them a chance of life in case of a mishap in the air. It is simply unthinkable that this can be allowed. Economy is drastically necessary, but there are very many directions in which expenditure can be reduced before we trifle with the lives of our pilots. It can be taken as reasonably certain that when commercial aerial services are started in earnest a fatherly Government will insist that every privately-owned passenger carrying machine shall be provided with a proper equipment of life-saving apparatus, of which the parachute will undoubtedly be a part. Surely the

Government cannot logically insist upon safeguards in the case of civilian aviators and passengers which it parsimoniously denies to its own fighting pilots and observers. It seems all so utterly incredible that we prefer at the moment to think there has been some misunderstanding and that the Treasury is not as black as it is painted.

Down with Dora!

Why is it that, four months after the cessation of hostilities, the ordinary civilian is still forbidden to purchase or to have in his possession anything even remotely connected with wireless telegraphy? During the continuance of the War the ban was undoubtedly necessary, but now that it is all over there seems to be neither rhyme nor reason for its continuance. It is a matter of common knowledge that wireless telegraphy has practically been the creation of the amateur and that without his research and discoveries there would, in fact, have been no such thing as wireless. It may be argued in reply that the tremendous advances achieved during the War were accomplished by the Services, but in this connection it must be pointed out that the latter had the advantage of the assistance of numbers of men who, before the War, were enthusiastic amateur investigators. At the present moment there seems to be no hope of any relaxation of the existing prohibition for many months to come—not until the signature of the final peace treaty automatically leads to the demise of D.O.R.A.—unless the Government can be forced to move by stress of public opinion. We are glad to know that the *Wireless Press* has initiated the necessary campaign for the creation of that opinion and wish it every success in the task.

Honours for R.N.A.S.

It was announced in a supplement to the *London Gazette* on March 24 that the following awards have been approved for services in the Royal Naval Air Service between July 1 and December 31, 1917:—

Meritorious Service Medal.

C.P.O. 3rd Cl. E. H. MCCARTHY, O.N. F.10584; C.P.O. 3rd Cl. R. P. GARDNER, O.N. F. 3731; P.O. P. J. BRAZIER, O.N. F.18403; C.P.O., 3rd Cl. G. LETHBRIDGE, O.N. F.18416; C.P.O., 3rd Cl. J. MCC. ORR, O.N. F.18444; P.O. D. H. J. GIBSON, O.N. F.10607.

"Secretary of State for Air"

FOR some time there has been confusion as to the exact title of the Air Minister, but it is now stated that the King has been pleased to approve the alteration of the title "Secretary of State for the Royal Air Force" to that of "Secretary of State for Air."

New London-Paris Record

A NEW air "record" between London and Paris has just been established. One of the Airco (De H.) machines of the official communication squadron used by the Peace Conference Delegates on March 28 did the flight from London to Paris, a distance of 250 miles, in 1 hour 20 minutes.

The Atlantic Fleet

THE arrangements made for the composition of the Atlantic Fleet, in full commission—provisional, until the settlement of peace—include the use of five seaplane carriers *Furious*, *Vindictive*, *Argus*, *Pegasus* and *Nirvana*. No mention is made of seaplane carriers with the other fleets and squadrons.

The Aeronautical Commission

THE fourth meeting of the Aeronautical Commission was held on Monday, March 31, in order to receive and consider the reports of the sub-committees on military, legal, and commercial and technical subjects respectively. At this meeting,

in addition to the representatives of France, Great Britain, the United States, Italy, and Japan, representatives of Portugal, Belgium, Brazil, Roumania, Greece, Serbia, and Cuba were also present.

The work of the sub-committees was not complete, but the Commission approved of the interim reports submitted. The Commission agreed to put forward to the Supreme Council proposals to be finally submitted at their next meeting by the joint military and legal sub-committee.

In other directions good progress was made, and substantial agreement arrived at on important points in connection with the future of commercial aviation.

"War in the Air Exhibition"

OPENED on Wednesday this week by General Seely, the photographs in colour got together by the R.A.F. at the Grafton Galleries, Grafton Street, is probably one of the most remarkable collections of pictorial record of events during the War connected with the marvellous air work of the Air Force that has ever been seen. Taken as a whole, nothing more realistic can be imagined than the many "stunts" depicted on the walls. In fact, so realistic are those coloured photographs, we can well imagine that they will enable many an over-nervous would-be passenger to describe most minutely what things look like during his or her flight (of imagination) on some point to point jaunt. The exhibition opening was too late for us to deal with it in detail this week, but we hope to treat this unique show adequately in our next issue.

Aeroplane Work in Egypt

DELAYED messages from Cairo show that aeroplanes have been playing an important part in dealing with the disturbances in Egypt. Several cases have been reported in which aeroplanes have succeeded in dispersing mobs of rioters. Apart from this work the aeroplanes have been of considerable service in patrolling the districts of the Wady Natroun district and along the railway to the north and south of Cairo.

THE SIDDELEY AERO ENGINES

THE "PUMA"

TOWARDS the end of the year 1916, the R.F.C. began to feel the need of an aero engine of larger horse-power than they were using. Trials had already been made with an experimental aeroplane known as the D.H. 4 fitted with a six-cylinder engine of rather more than 200 h.p., and these trials were so successful that the demand for an engine of about this power that could be produced in large numbers became acute.

The Siddeley-Deasy Motor Car Co., Ltd., was asked by the Ministry to undertake the production of an engine in large quantities to meet this demand, and it was at first suggested that an engine similar to that used in the experimental aeroplane should be manufactured.

For many reasons this was found to be impossible, and finally the Siddeley Deasy Co. were asked to prepare designs for an engine on similar lines. The design of the Puma engine was started in January, 1917. The experimental engine was made and completed in March, and trials were very successful. Some further modifications were made in the engine to ensure a rapid production, and quantity production was begun. The engine first began to appear in quantity at the end of the Autumn, and the output gradually grew until in October, 1918, the last complete month before the Armistice, no fewer than 625 complete engines were delivered, and in addition a very large quantity of spare parts.

General Description

The Puma engine has six vertical cylinders, 145 mm. bore by 190 mm. stroke, and follows conventional practice in its general arrangements. The valves are in the cylinder heads, and are worked by an overhead camshaft. This type of engine was chosen as it was necessary to make an engine which could be looked after and maintained by mechanics who did not possess very great skill or experience. Reliability is always of the utmost importance in aero engines; as the aeroplane for which this engine was originally intended had to undertake long-distance bombing raids, extreme reliability was absolutely essential.

Cylinder Construction

The chief novelty of the engine lies in the construction of the cylinders, which are in two blocks of three. The cylinder heads carrying the valves are made of a casting of an aluminium alloy into which liners are shrunk and screwed to form the cylinder barrels. This is a process requiring great care, and a special plant was installed to ensure that the cylinder heads were kept at the right temperature while the screwing in operation was done. The cylinder is completed by an aluminium jacket which is held by means of a flange joint to the cylinder head, and which makes a water-tight joint with the barrel by means of a gland with rubber packing.

The valve seats are of a special quality bronze, and are expanded into the cylinder head, after which they are machined in position.

Valve Gear

Each cylinder is fitted with three valves, one large inlet and two smaller exhaust valves. The inlet valve is worked by a rocking lever, actuated by an overhead countershaft. The exhaust valves are worked direct from the countershaft, the cam striking an adjustable flat topped cap which is fixed to the valve itself. The exhaust valves are made of tungsten steel, very similar in composition to that used for high speed tool steel; grinding in is scarcely ever necessary, as tests have shown that full power can be maintained for periods of 100 hours although the valves have not been touched.

Crankcase Unit

The cylinders are mounted on an aluminium crankcase which carries a very substantial hollow crankshaft mounted in seven white bearing. The lower half of the crankcase is not intended to carry a supply of oil, and is fitted with a deep trough from which the oil is collected and returned to the oil tank. On the front of the crankshaft is mounted a propeller boss which is driven by means of serrations, so arranged that the boss can be mounted in one position only. The propeller boss carries pointers which indicate on markings on the engine base the position at which the valves should open and close, thus making the adjustment of the valves an easy matter.

Lubrication

The lubricating oil is contained in a tank which is separate from the engine, and which feeds the oil pump. From this pump the oil is forced to all the main bearings of the crankshaft whence the connecting rod bearings are supplied from holes in the crank web; oil is also supplied to the various gears and the overhead camshaft. A spring bypass valve

adjustable from the outside of engine is provided, so as to keep the pressure of the oil constant.

After the oil has performed its duty in lubricating the engine, it drains back into the lower half of the crankcase, from which it is sucked by another oil pump of larger capacity and is pumped back into the main oil tank. The oil is filtered both before it goes into the engine and before leaving it. Particular care has been taken so that while all the parts of the engine receive ample oil, as little as possible escapes into the combustion space. Special form of scraper ring is fitted to the pistons to affect this purpose, and the result is so successful that the engine will run for long periods without carbon forming on the piston top, while the sparking plugs give little trouble through oiling up. Carbonisation is also prevented to a large extent by the use of aluminium alloy pistons; these are designed so that they will keep as cool as possible.

Ignition

The engine is fitted with two entirely separate ignitions. These may either be two separate magneto systems, or one magneto and one high tension electric system. In the latter case, the high tension distributor is driven off the back end of the camshaft.

Self-Starter

It has been found in practice that the engines are easy to start by pulling round the propeller and sparking the cylinders with a hand starting magneto, and in cases where this is inconvenient, the engine can be provided with either an air or electric starter.

The air starter consists of a valve fitted to the front end of the camshaft, which distributes the compressed air to all the cylinders; the engine thus acts as an ordinary compressed air motor and will turn at a good speed. As soon as the engine fires, non-return valves in the cylinders cut off the air supply.

The electric starter consists of a small motor driving the engine through a big reduction gear with a special form of clutch. Excluding the accumulator, the additional weight of the electric starter is about 25 lbs., while the air starter weighs an additional 12 lbs. without compressed air bottles.

Water Circulation

Water is circulated round the cylinders by means of a pump driven by an extension of the vertical shaft that drives the camshaft. The pump is powerful enough to ensure a water flow that keeps the engine at a temperature which is nearly uniform throughout. On account of the high heat conductivity of the aluminium alloy cylinder heads, overheating is unknown so long as there is water in the system. This enables a comparatively high compression to be used, with its consequent gain in power and efficiency.

Carburettor

Two types of carburettor have been used on the engine, which give nearly identical results. These are the Zenith and Claudel Hobson type H.C. 8. An engine has two carburettors each of which feed a block of three cylinders. The carburettors bolt direct on to the engine, and there is an entire absence of copper piping. The induction pipe, which is cast in the cylinder head, is well heated by water, an important point when it is remembered that engines have to work satisfactorily in the extreme cold experienced at heights of over 20,000 ft.

Accessories

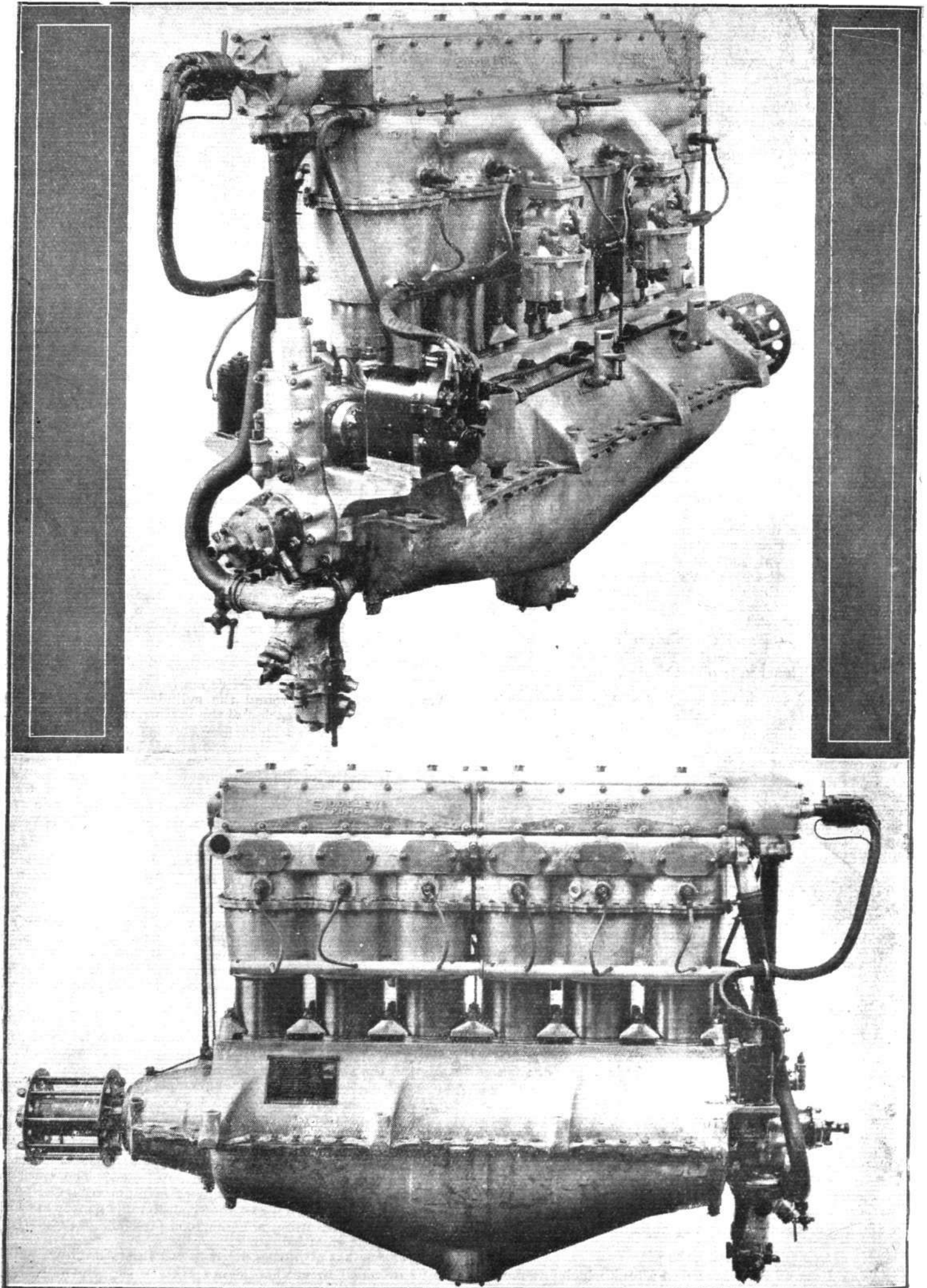
A small air pump is provided so that it can be used in connection with the petrol supply if desired; this is driven by a cam on the vertical shaft. Provision is made for driving a synchronising gear used to fire machine guns through the propeller, while a drive is provided for the flexible shaft of a revolution indicator.

Installation

The Puma engine was chiefly used in service fitted to the de H.9 aeroplane, which was used for long-distance bombing raids, generally carried out in the day-time. The earlier machines were fitted with engines of medium compression, but latterly it has been found that considerable gain in speed could be made by using a higher compression, particularly when flying at great heights.

The engine has also been fitted to the Bristol Fighter, and it was intended to use aeroplanes fitted with this engine in very large numbers during the present year.

The Puma engine was fitted to several other aeroplanes experimentally, notably the F.E. 2B, which is a machine of the pusher-type in which the propeller is behind the engine. It has also been used in the de H. 10, which is a two-engine



The Siddeley "Puma" aero engine

bombing aeroplane, while the Bristol Triplane used four of these engines two in tandem on each side of the pilot.

Some Engine Test Results

The Puma engine has been subject to many remarkable trials on the test bench, in addition to its work in the air.

At the R.A.E. a Puma engine, taken at random, was run for 180 hours with no involuntary stops. Power curves taken at the beginning and the end of the run were practically indistinguishable. The average power maintained throughout this period was 249 h.p., and the rate of revolution 1,600-1,700 per minute.

In the Siddeley Works similar engine tests have been carried out, and the test recorded at the Aircraft Establishment is by no means exceptional.

The petrol consumption on test varies slightly with the carburettor setting, but a consumption of 55 pints per horsepower can always be obtained at about nine-tenths power,

On absolute maximum power the consumption is a trifle above this. The oil consumption in the air is generally about 1 gallon per hour, varying somewhat according to the temperature.

Leading Particulars of the Puma Engine

No. of cylinders, 6.
Bore, 145 mm.
Stroke, 190 mm.
B.H.P. at 1,500 r.p.m., 260.
B.H.P. at 1,700 r.p.m., 290.
Petrol consumption, .55 to .6 pt.
Oil consumption, .03 to .045 pt.
Weight dry, 630.
Compression ratio, 5.4 to 1.
Length over all, 1,775 mm.—70 in.
Height over all, 1,108 mm.—44 in.
Width over all, 612 mm.—24 in.
Bearer centres, 436 mm.—17½ in.

THE "TIGER"

TOWARDS the end of the year 1917 the need for bombing aeroplanes of larger power was realised by the R.A.F.; as a consequence the demands for engines of greater horsepower became urgent. At the beginning of the year 1918 the Siddeley Co. were asked to undertake the design and manufacture of an engine to give at least 600 h.p.

In view of the success of the Puma engine it was decided to continue the use of aluminium cylinder heads, and for the large power required, a 12-cylinder engine was adopted.

The Tiger engine has run for a large number of hours on experimental tests. The results given have been very encouraging, the horse-power that could be maintained continuously being as high as 650, while rather greater horse-power can be given for short periods. A fresh series of engines is now under construction, in which various small improvements suggested by tests have been made, and the makers feel so confident of the engine that they are prepared to guarantee a continuous horse-power of 650 from every engine.

General Description

The Tiger engine has two lines of six cylinders, inclined at an angle of 60 deg. Each cylinder is 160 mm. bore by 180 mm. stroke, and is a separate unit.

The valves are in the cylinder heads, and are worked by two overhead camshafts.

The object of the designers has been to make a robust engine with the absence of small parts, which will be able to run for long periods without requiring overhauling. As the engine was intended for use on aeroplanes making long-dis-

tance journeys into Germany, extreme reliability is essential and to determine this, very long duration trials have already been carried out.

Cylinder Construction

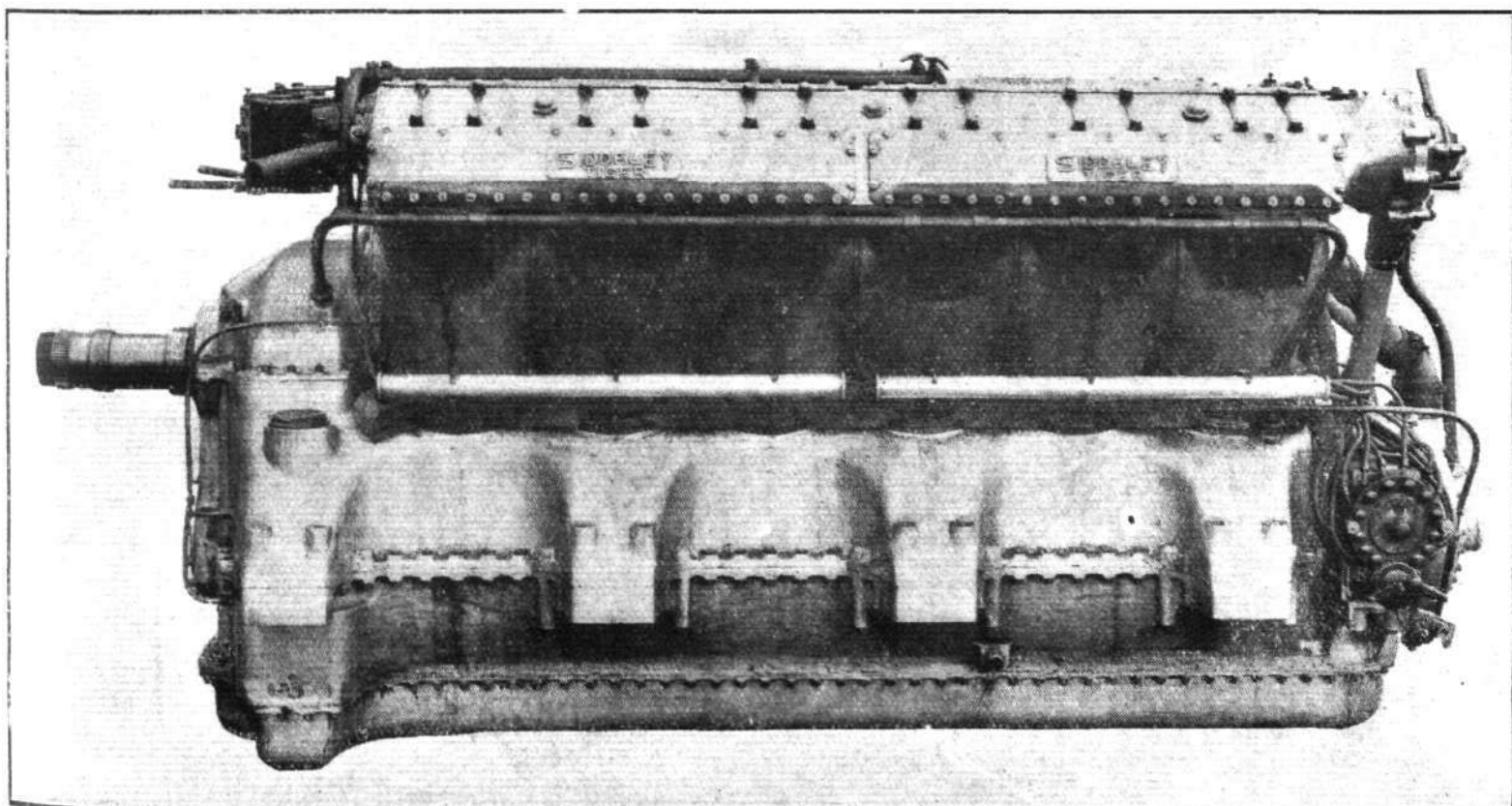
The cylinder construction is similar to the Puma engine, but in this case the cylinders are separate units and are fitted with four valves instead of three. The valves are worked by an overhead camshaft through rocking levers. The cylinder head and water jacket are cast in one piece, and the cylinder is completed by a steel liner which is screwed and shrunk into the cylinder head.

The valve seats are of special bronze alloy, and are expanded into the cylinder head, after which they are machined into position. Each line of six cylinders has an overhead camshaft working the two exhaust and the two inlet valves on each cylinder. The camshaft can be slid axially so as to introduce a special set of cams which form a half compression device, thus making the engine very much easier to start.

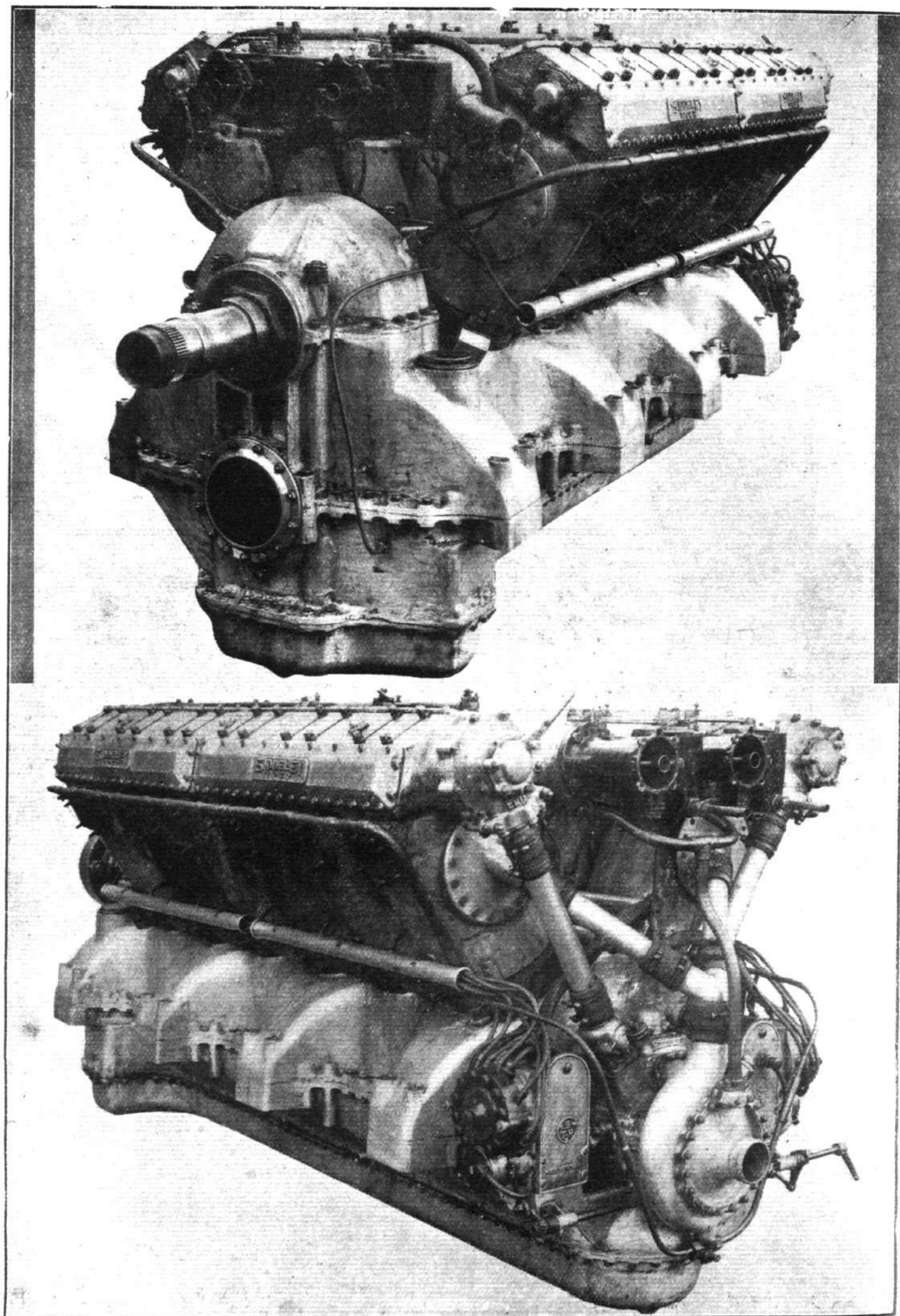
Pistons and Connecting Rods

The pistons are made of die-cast aluminium alloy, fitted with cast iron rings. The gudgeon pin floats both in the piston and in the connecting rod, and is held from moving sideways in the piston by means of expanding steel rings.

The connecting rods are tubular. The rods on one side are forked, and are clamped to the bush surrounding the crankpin, while those on the other side take a bearing on the bush between the fork of the corresponding rod.



THE SIDDELEY "TIGER" AERO ENGINE.—Side view



The Siddeley "Tiger" aero engine.

Crankcase Unit

The cylinders are mounted on a substantial aluminium crankcase, which carries a hollow crankshaft mounted in seven white metal bearings. The lower half of the crankcase forms the caps of the crankshaft bearings, and is fitted with drain pumps so that the base will be dry no matter to what angle the engine is tilted. On the front end of the crankshaft is mounted a gear wheel made of special case hardened high tensile steel.

The gears are so arranged that a maximum reduction of two to one can be obtained, while other gears can be supplied to give other speeds as may be required.

Lubrication

The lubricating oil is contained in a tank separate from the engine, which feeds a double oil pump. The oil supply from the main part of this pump feeds the main bearings of the crankshaft in the usual way, whence the connecting rod bearings are supplied. The small part of the pump feeds the overhead camshaft gear at a lower pressure.

The oil drains back into the lower half of the crankcase from which it is sucked by two pumps, one at each end of the base, and returned to the oil tank.

Ignition

The engine is fitted with two entirely separate ignition systems. These may be two 12-cylinder magnetos or one magneto and a high-tension electric system.

Self-Starter

The engine can be started by means of a small electric motor driving through a large reduction gear and a special form of friction touch. This is a standard part of the engine, and is included in the weight.

Water Circulation

Water is driven through the cylinder jackets by means of a pump driven from the rear end of the crankshaft. In order to avoid breakage in case an attempt is made to start up the engine when the pump is frozen, the drive from the crankshaft is through a multiple plate clutch which can slip if the pump is not able to turn.

Carburettor

Each block of six cylinders is fed through a separate

induction system. The carburettors are placed outside the engine, and an induction pipe goes between the third and fourth cylinders on each line. Great care is taken to ensure that sufficient heat is provided to make the engine run smoothly in the extreme cold experienced at great heights.

Installation

The width holding down both of the engine feet is 27 ins. This is a considerable advantage from the designer's point of view, as it enables sufficient width to be used to take the torque re-action of the engine on the frame without difficulty, and in many cases it should be possible to dispense with any sort of sub-frame altogether.

The propeller shaft is higher than the crankshaft which enables a large propeller to be used without raising the engine unduly in the frame, while the reduction gear makes the use of a very efficient propeller possible.

Weight

The weight of the engine complete with electric self-starter and all accessories, but without water or radiator, is 1,350 lbs. The horse-power is 650, consequently the weight per horse-power dry is just under 2.1 lbs. As this weight includes the reduction gear, and as no parts of the engine are in the least fragile it is considered that this weight makes an important advance in the design of large aero engines.

Some Test Results

Petrol consumption is found to vary from .55 to .6 pt. per h.p., while the oil consumption is about 2 gallons per hour on full power. The horse-power developed at 1,500 revolutions of the engine is 600, while 650 h.p. is developed at rather less than 1,700 revolutions.

Leading Particulars of the Tiger

Number of cylinders, 12.
Bore, 160 mm.
Stroke, 180 mm.
Normal b.h.p., 650.
Revolutions per minute, crankshaft, 1,700.
Revolutions per minute, propeller with standard reduction gear, 950.
Weight dry, 1,350.
Petrol consumption, .55 to .6 pt. per h.p. hour.
Oil consumption, .02 to .04 pt. per h.p. hour.

Reconstruction

The future programme arranged by the Industrial Reconstruction Council includes a meeting on April 30 at the Saddlers' Hall, 141, Cheapside, E.C. 4, when Mr. G. Holt Thomas will lecture on "The Aeroplane in Industrial Development." The Rt. Hon. Lord Balfour of Burleigh will take the chair.

On May 6 a conference and discussion will be held at the Hall of the Institute of Journalists, 2 and 4, Tudor Street, E.C. 4, when Mr. G. H. Humphrey, of Messrs. John Dawson and Co., Ltd., will speak on "Workmen as Directors." Mr. Gordon Selfridge will take the chair.

The India-Australia Route

FROM Delhi comes word that General Borton and Capt. Ross-Smith are sailing from Calcutta in the "Minto," which has been placed at their disposal by the Government of India in order to carry out their reconnaissance of an aerial route to Australia.

This was interrupted by the recent unfortunate fire which occurred on board the "Sphinx" off Chittagong while surveying the coast line for suitable sites for the Calcutta-Rangoon air route.

A Cairo-Bombay Mail Service

It is understood that an aerial mail service for unofficial letters will shortly be started between Cairo, Karachi and Bombay. Postal arrangements are said to be nearing completion and in due course an announcement fixing rates will be made. Letters from Great Britain for the Indian aero-mail will have to be marked "Express—Air Service," and an express fee, probably of two or three shillings, will be charged.

The "Carthusian" Reaches Lahore

It was announced on March 29 that the four-engined Handley-Page aeroplane "Carthusian" had reached Lahore from Delhi, the final stage of its 7,000 miles journey from Ipswich. The machine circled twice over Lahore and made a fine landing in the presence of enthusiastic crowds.

The Lille-Paris Mail

WITH a load of 400 letters and 1,200 telegrams, Flight-Sergt.-Maj. Pattin on March 26 left Lille at 12.15 p.m. and landed at Le Bourget (close to Paris) an hour later. The distance is about 120 miles, and unfavourable and foggy weather was encountered the whole way.

Service to Norway Postponed

TRAFFIC by air between Great Britain and Norway is not expected to begin this year, owing to questions of international air law to be settled and to the high prices of aeroplanes.

London-Amsterdam Services

ACCORDING to the *Telegraaf* four separate syndicates are preparing to start companies to organise aerial services between London and Amsterdam. It is stated also that the British authorities have suggested that these syndicates should combine to form a joint company and negotiations to that end have been initiated.

Italian Pilot Killed in the Alps

It was reported from Milan on March 24 that Capt. Palli, who had taken part in 140 raids, including the one to Vienna, had been killed whilst flying over the Alps in the Mount Blanc region. Caught in a snowstorm, his aeroplane was forced to land near Bourg St. Maurice, Savoy. He apparently got out of his machine and started to search for assistance, when he was overwhelmed by a snowstorm. Capt. Palli had left the Padua aerodrome with the intention of reaching Rome via Paris after passing over Mont Blanc.

Italian Prince in Flying Accident

A REPORT from Trieste states that Lieut. Pierotti left Venice on March 17 on a seaplane with the object of taking to Trieste Prince Aimone, Duke of Spoleto, who desired to see his parents, the Duke and Duchess of Aosta. The machine, however, fell into the sea, and the two airmen were picked up by a steamer and taken to Trieste, where they were conveyed to hospital.

The Duke of Spoleto was injured, and Lieut. Pierotti, who received mortal injuries to his head, died a few hours afterwards.

"MILESTONES"

THE ARMSTRONG-WHITWORTH MACHINES

BEFORE commencing a description of the A.W. machines, as the aeroplanes built by Sir W. G. Armstrong, Whitworth and Co., Ltd., of Newcastle, are usually called, a short reference to the history of the firm may be of interest to those who have not had the opportunity of following at close quarters the developments that have taken place since the A.W. aviation department was first formed in 1913. Although it is not generally realised, it is nevertheless a fact that aeroplanes were built by this firm as early as 1912, in which year the first aeroplane, a Farman type biplane with 50 h.p. Gnome engine, was constructed, and was afterwards sold to A. V. Roe and Co., of Brooklands, who used it for school work. This machine was built at the Elswick works, and

The 90 h.p. Biplane Type, F.K.3 1915

In August, 1915, a biplane having a 90 h.p. R.A.F. engine was put in hand, intended to compete with the B.E. 2c. This machine, the F.K. 3, was successful in its trial flights, and a large order for these machines was placed with the firm during 1916. The output of F.K. 3's, which were constructed alongside the B.E. 2c's, had now reached from 20 to 25 per month, and complete squadrons were equipped for service on the various fronts. In addition a large number were employed for training pilots at home. From the illustrations it will be seen that the F.K. 3 is not unlike, in a general way, the B.E. 2c, which it was intended to supplant. There is the same large gap and shallow, narrow



The A.W. Biplane, Type F.K. 3, fitted with 90 h.p. R.A.F. engine.

it was not until August the following year, 1913, that the Armstrong-Whitworth aircraft department was formed, with works in the sawmills at Scotswood, near Newcastle. The War Office placed orders with the firm for a small number of B.E. 2A biplanes, the first of which was completed in April, 1914. Further small orders were subsequently received for the improved type of machine known as the B.E. 2B, and these were completed in August, 1914. The aeroplane works were then transferred to new premises on the Town Moor, Gosforth, and on the outbreak of War, the War Office issued instructions to extend the works, placing at the same time large orders for B.E. 2c biplanes. The extensions were rapidly completed, and good progress in the production of aircraft was made, the output being from four to six machines per week. In the meantime, Mr. Frederick Koolhoven, now managing director of the British Aerial Transport Co. joined the firm as designer, and from his drawing board issued a series of aeroplanes of various types, some of which did not survive the experimental stage, but many of which went into production and became well known on practically all the fighting fronts. A number of these experimental machines are not included in this series, as we have been unable to obtain from Messrs. Armstrong, Whitworth and Co. any data relating to them.

fuselage. The undercarriage is, however, different from that of the B.E. 2c, and consists of a central skid mounted on two pairs of Vees from the *fuselage*, and of a two-wheel running gear mounted on shock absorbers in the side of the body, somewhat after the fashion of the old R.E.P. monoplanes in France.

The 160 h.p. Biplane, Type F.K. 8 1916

Towards the end of 1916 a larger and improved type of two-seater tractor biplane was designed. This machine, the F.K. 8, was fitted with a 160 h.p. Beardmore engine, and had two machine guns and a wireless installation. It proved a great success, and was built in great quantities, both by the original designers and by other firms. Squadrons of the Royal Flying Corps were equipped with it and used it on all the fighting fronts, its duties including night and day bombing, artillery spotting and reconnaissance, trench fighting, dropping of food to advanced troops, etc. Towards the end of 1917 the output of complete machines of this type in the A.W. works had reached between 80 and 100 machines per month. Construction was continued until July, 1918, when the machine was superseded by the Bristol Fighter. The illustrations will give a good idea of the general lines of the F.K. 8, which, owing to being fitted with a vertical engine, has a certain similarity to German aero-



The A.W. Biplane, Type F.K. 8, with 160 h.p. Beardmore engine.



A.W. 160 H.P. BIPLANE.— This machine is similar to the F.K. 8, but has a Vee undercarriage.

planes, an impression that is furthered by the fact that there is no centre section, the two halves of the top plane meeting at and being attached to the top of a *cubane* of steel tubes. The earlier machines were fitted with an oleo type of undercarriage, somewhat similar to that of the F.K. 3, but with the central skid cut short in front of the front under carriage struts. This is the machine shown in the accompanying scale diagrams. One of our photographs shows a some-

120 h.p. Beardmore, 200 Hispano-Suiza, or 250 h.p. Siddeley Puma engines.

The A.W. Quadruplane, Type F.K. 10 1917

Next in the series comes the A.W. "Quad.," which was first tested some time in 1917. By that time the single-seater fighting scouts were being employed in great quantities, and the question of good visibility was one of paramount



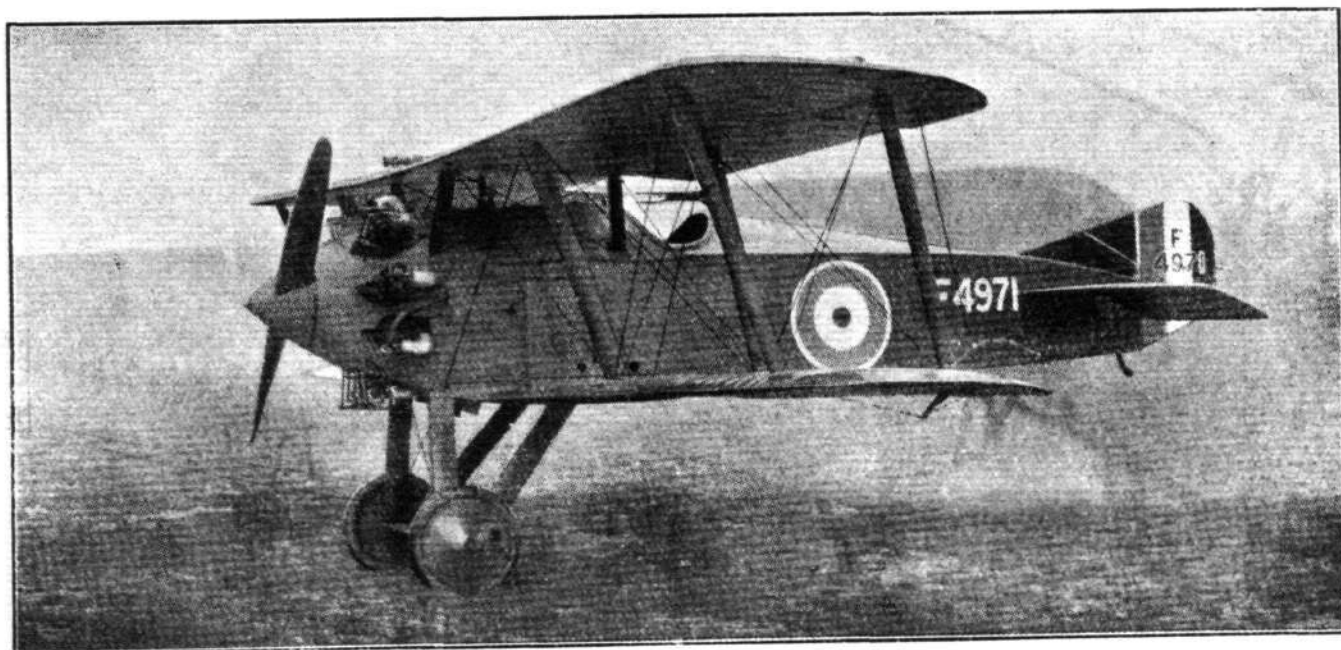
TWO A.W. QUADRUPLANES.— In the background is seen an experimental A.W. Biplane with 220 h.p. Sunbeam engine.

what modified form, in which the oleo chassis has been supplanted by one of the ordinary Vee type. There is otherwise so little difference between the two types that we have not thought it necessary to publish scale diagrams of the second type. The outward appearance is the same in both cases, with the exception of the undercarriage. The F.K. 8 is greatly liked by pilots, and is generally considered very safe and strong, while being very easy to fly. If desired for peace purposes, the machine can be adapted to take

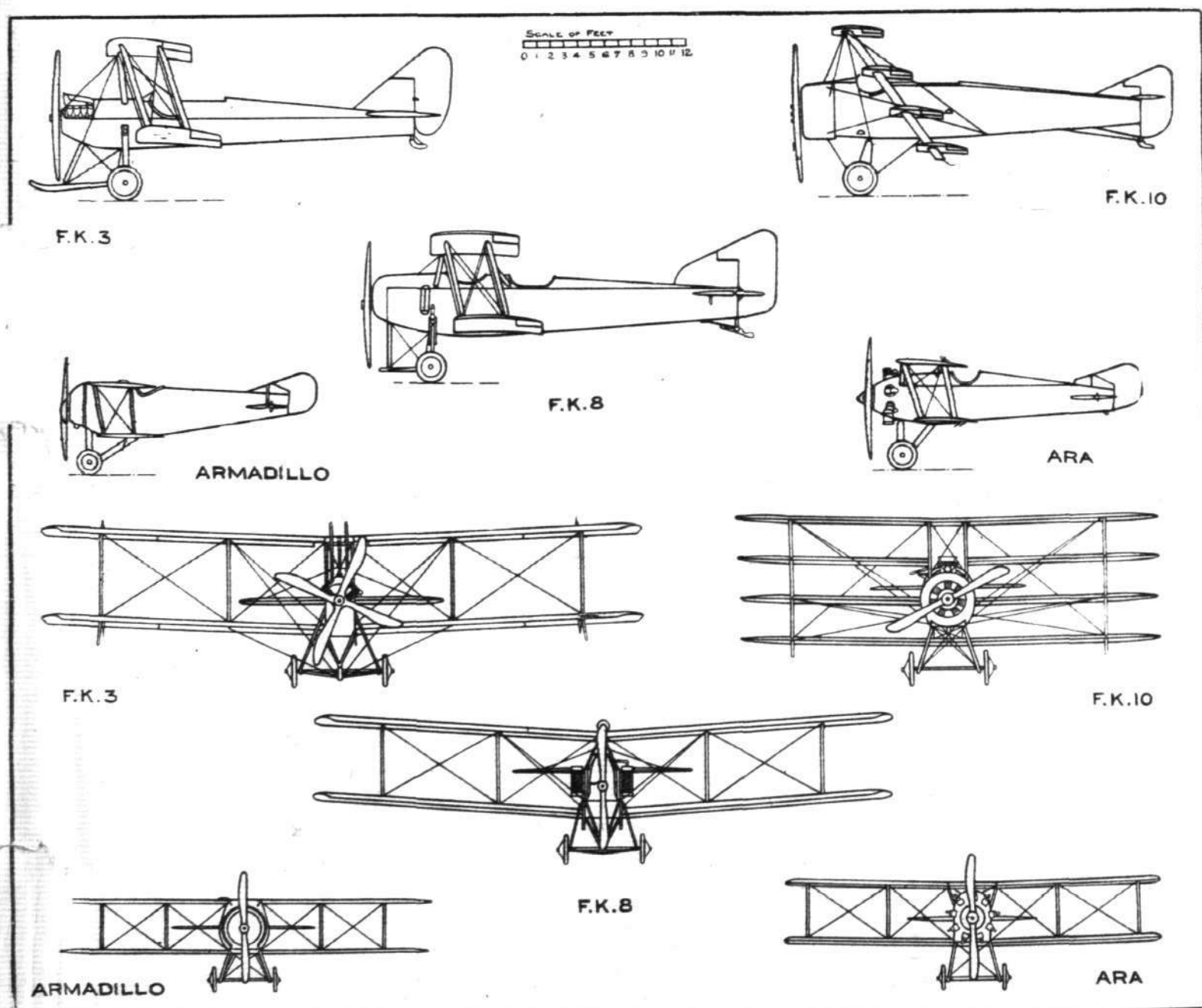
importance, a pilot whose machine obscured the view to a great extent in any direction being at a considerable disadvantage. This question of visibility was attempted to be solved in the A.W. "Quad.," in which, as will be seen from the accompanying illustrations, the stagger was very pronounced, while the second plane passed across some little distance above the top of the fuselage, the third and fourth planes passing through and under the body respectively, and obstructing, owing to their narrow chord, the view to



THE A.W. " ARMADILLO " SINGLE-SEATER.— This machine is fitted with a B.R. 2 engine, the cow1 for which is of somewhat unusual shape.



THE A.W. " ARA " SINGLE-SEATER.—The engine fitted is a 320 h.p. A.B.C. " Dragonfly."



Front and side elevations of the Armstrong-Whitworth machines.

Table of dimensions of A.W. machines.

Type of machine.	Length o.a.	Wing span.		Wing chord.		Wing area.*			Inci-dence.		Gap.	Stagger.	Sweepback.	Dihedral.		Aileron area.	Area.			Area.		
		Top.	Bot.	Top.	Bot.	Top.	Bot.	Total.	Top.	Bot.				Top.	Bot.		Tail-plane.	Elevators.	Total.	Fin.	Rudder.	Total.
F.K. 3	28 6	40 0	40 0	5 8	5 8	229	213	442	24°	12°	5 11	1 11	0	4	4	64	27'0	22'0	49'0	5'8	9'5	15'3
F.K. 8	30 8	43 0	43 0	6 6	6 6	270	254	524	24°	24°	5 9	1 7 1/2	0	5	5	72	28'0	13'0	41'0	7'5	15'0	22'5
F.K. 10†	22 3	27 10	27 10	3 7	3 7	102'6	102'6	398'4	3	3	2 8	1 5	0	1 1/2	1 1/2	67'2	..	16	..	1'0	8'0	9'9
Armadillo	18 10	27 9	27 9	5 3	4 6	125	125	250	24°	1	3 11	0 8 1/2	0	0	2	36	17'0	14'0	31'0	1'6	6'0	7'6
ARA.	20 3	27 5	27 5	5 3	4 6	147	110	257	24°	1 1/2	3 10 1/2	0 11 1/2	0	1 1/2	1 1/2	20'4	25'0	24'0	49'0	2'5	11'0	13'5

* Including ailerons.

† Area of second and third planes, each, 92'6 sq. ft.

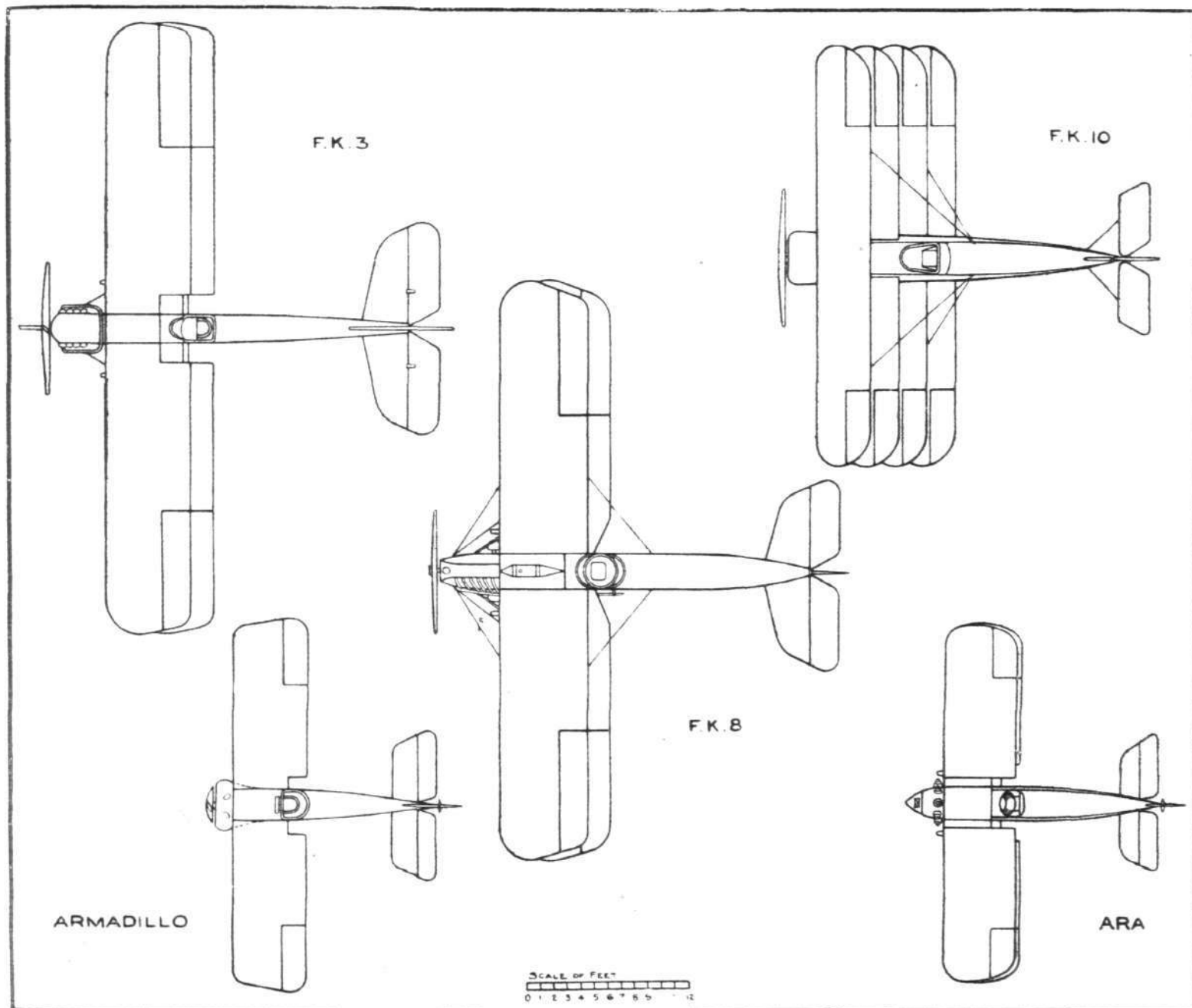
Table of weights, etc., and performance of A.W. machines.

Type of machine.	Engine.		Weight of machine.		Fuel capacity. hours.	Range (in miles).	Speed (m.p.h.).			Climb (in mins.) to			Ceiling. ft.	Landing speed. m.p.h.	Load/sq. ft. lbs.	Load/h.p. lbs.	Military load. lbs.
	Type.	H.P.	Empty (lbs.).	Loaded (lbs.).			Ground level.	10,000.	15,000.	5,000.	10,000.	20,000.					
F.K. 3	R.A.F.	90	1,700	2,300	3.5		87	65		25			16,000	38	5.2	35.5	
F.K. 8	B.	160	1,720	3,000	3.75		102	98		20			20,000	45	5.7	18.8	
F.K. 10	C.	130	1,143	1,804	..		105	99		17			25,000	..	4.5	13.9	
Armadillo	B.R. 2	230	1,250	1,860	2.75		125	113		6.5			24,000	55	7.4	8.0	
ARA.	D.	320	1,320	1,925	3.25		150	144		4.5			28,000	55	7.5	6.0	

B = Beardmore.

C = Clerget.

D = A.B.C. "Dragonfly."



Plan views of the Armstrong-Whitworth machines.

a small extent only. When this machine first appeared the triplane had been tried with fair success, but the multiplane was somewhat of a dark horse, as regards its aerodynamic properties. From the table of performance it will be seen that the speed and climb of the A.W. Quad. were, if anything, inferior to those of contemporaneous triplanes with the same engines, while being a good way behind small biplanes with engines of 130 h.p. It, therefore, appears that quadruplanes do not give so good results as biplanes or triplanes as regards performance, and we understand that they are not particularly nice to fly. It will be noticed that on the A.W. Quad. there is no fixed tail plane. This is probably in order to render the elevators as effective as possible, a necessary precaution on a quadruplane with its comparatively great height over the aerofoils.

The A.W. "Armadillo" 1918

As more powerful engines became available, the designs for a number of experimental machines were got out, among them being the 220 h.p. "Armadillo" and the 320 h.p. "Ara." The former was fitted with a B.R. 2 rotary engine, and the trial flights took place in September, 1918. The results were so promising that it is fairly safe to say that the machine would have been put into production in time for the 1919 spring offensive. From the illustrations it will be seen that the chief characteristic of the Armadillo is that the top plane is mounted on the top of the fuselage on a level with the eyes of the pilot. Owing to the small gap between the planes there are two pairs of inter-plane struts on each side, thus ensuring a better angle for the lift wires. The

rotary engine is enclosed in a circular cowl, which is surmounted by a square, box-like excrescence, inside which the two machine guns are mounted, synchronised, of course, to fire through the propeller.

The A.W. "Ara" Single-seater 1919

An improved type of single-seater was contemplated at the time of testing the Armadillo. This was to be fitted with a 320 h.p. Dragonfly engine, but as considerable delay was experienced in the production of this engine, it was not until the last week in December that an engine could be obtained. In the meantime, in the hope of getting this engine, a machine had been built for it. This was the one now known as the "Ara" type. Owing to the delay in obtaining the engine it was not until January, 1919, that the machine was ready for its tests. As will be seen from the table, the performance is very good indeed, both as regards speed and climb. In appearance the "Ara" is somewhat different from the "Armadillo," the top plane being placed some little distance above the fuselage, while the fact that the engine fitted is a radial instead of a rotary has made it possible to provide a better entry for the air in the neighbourhood of the nose of the fuselage. A cone-shaped spinner is fitted over the propeller boss, and only the tops of the cylinders project beyond the cowl. The undercarriage is of the usual simple Vee type.

Previous instalments in this series appeared as follows:— Airco (De H.), January 9, 1919; Bristol, January 23, 1919; Sopwith, February 6, 1919; Avro, March 20 1919. All the scale diagrams of the "Milestones" series are to a uniform scale, and are thus immediately comparable as regards relative size.

NEW AVIATION INSURANCE SCHEME

A NEW scheme of aviation insurance, we are officially informed, has recently been devised made up of 31 of the leading insurance companies. Each company is now ready to receive enquiries, and will act independently and issue its own policies, while the assured will have, in addition to the security of that company, the combined securities of all the other companies in this scheme. The names of the offices are as follows:—

Alliance.	London and Lancashire Fire.
Atlas.	London and Scottish.
Caledonian.	London Guarantee.
Car and General.	North British and Mercantile.
Century.	Norwich Union.
Commercial Union.	Ocean.
Employers' Liability.	Phoenix.
Fine Art.	Railway Passengers.
Guardian.	Royal.
Gresham.	Royal Exchange.
Law Union and Rock.	Scottish Union.
Legal.	Sun.
Liverpool and London and Globe.	Union.
London.	Warden.

West of Scotland.	Yorkshire.
Western Australian.	Etc., etc.

Under this scheme manufacturers will be able to effect insurances against the following risks, among others:—

- (1) Damage to machines from any cause.
- (2) Accidents to passengers and pilots.
- (3) Loss of or damage to goods in transit.
- (4) Liability of injury to the public or damage to the property of the public.

The companies state they realise that policies for very large amounts will be required, in view of the fact that in the most recent machines provision is made for the carriage of a large number of passengers, while the normal third-party liability may be very considerable. The security offered, it is obvious, will be very large indeed, since the reserve funds of the companies supporting the scheme amount in the aggregate to many millions sterling. The announcement of the scheme marks a further great development in the provision of the large insurance facilities which will be required with the forthcoming development of commercial aviation, and the insurance companies are certainly to be congratulated on the step they have at last decided to take.

QUESTIONS IN PARLIAMENT

Loch Doon Aerodrome

Sir S. ROBERTS, in the House of Commons on March 24, asked the Under-Secretary of State to the Air Ministry what was the total expenditure incurred at Loch Doon; whether the saleable plant and other assets have been removed; and what was the amount of the proceeds of sale arising therefrom?

The Under-Secretary of State for Air (Maj.-Genl. Seely): The total expenditure to February 19, 1919, was £484,433. In this figure I do not include the cost of land and compensation to tenants is not included. The saleable plant and other assets have already been largely removed, being either transferred for Government purposes elsewhere, or sold to other purchasers. The value of materials disposed of in these ways will amount, when removal is completed, to an estimated total of, approximately, £210,000.

Mr. J. Jones: What was the amount of sacrifice that the landlords have made?

Maj.-Genl. Seely: I have not got the figures for the land.

Aerial Commerce with Dominions

Mr. HURD asked the Under-Secretary of State to the Air Ministry what measures he is adopting to carry out his undertaking to keep in touch with aviation progress in the Dominions; and whether, seeing the vital part taken by Canada and other Dominions in the air triumphs of the War, and the necessity of developing inter-Imperial commerce and communications by aviation, he can devise means to bring the Governments of the Dominions into intimate working association with his Ministry?

Maj.-Genl. Seely: The Dominions have been asked for suitable officers to be appointed for liaison between their respective Governments and the Air Ministry. Certain of these officers have taken up their duties and are the channel for assisting a complete interchange of information and views.

With regard to aerial commerce and communications within the Empire representatives of the Dominions and India in Paris are assisting the air section of the British Peace Delegation and their co-operation has been of great help in the consideration of the International Aerial Convention and the regulations and rules of the air. The Dominions concerned are also being

consulted by the Department of Civil Aviation on the subject of aerial communication and routes, and every endeavour is being made to keep in close touch on these subjects.

London-Bournemouth Flight

Lieut.-Col. MALONE, on March 26, asked the Under-Secretary of State to the Air Ministry whether a Service aircraft, believed to be a Nieuport Nighthawk, flew from London to Bournemouth on March 14 with newspapers; whether this is in accordance with the Regulations; and by whose authority this flight was carried out?

Maj.-Genl. Seely: The machine in question was being constructed for the Royal Air Force by a firm of contractors, and was undergoing the customary "Maker's Test," consisting of a four-hours' flight carried out by the firm's pilot. No particular route was specified. The Regulations at present in force prohibit civil aviation except when carried out under Naval or Military Instructions. In the present case instructions for the flight were issued by the Air Ministry authorities, but no permission to carry newspapers was either asked or granted, and the firm in question have been informed that the Air Ministry cannot permit such action pending the re-opening of civil aviation.

Women's Royal Air Force

Mr. THOMAS GRIFFITHS, on March 27, asked the Under-Secretary of State to the Air Ministry if Mirabelle Hallan, a member of the Women's Royal Air Force, was detained in a cell at Redcar for three and a-half days because there was no resident magistrate's clerk in Redcar; whether the charge brought against this woman was dismissed; whether he proposes to take any action against those responsible for wrongly accusing this woman; and whether he will consider the possibility of granting her compensation for the financial loss sustained by her as a result of being kept in prison for this period on an unfounded charge?

The Under-Secretary of State for Air (Maj.-Genl. Seely): Miss Mirabelle Hallan was guilty of a breach of her contract of service, namely, refusal to perform her duties, and, after being several times warned, was handed over to the civil authorities in accordance with the terms of the contract. The action of the civil authorities has already been dealt with in the reply given on behalf of the Home Office on the 24th inst.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

AERO PROPRIETARY, LIMITED

THE Seventeenth Annual General Meeting of the Shareholders of Aero Proprietary, Limited, was held at 3, Clifford Street, W., on Monday, March 31, 1919, at 5.15 p.m., when there were present:—Brig.-Gen. The Duke of Atholl, K.T., M.V.O., D.S.O., in the Chair, Mr. Ernest C. Bucknall, Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., Lieut.-Col. A. M. Longmore, R.A.F., Lieut.-Col. F. K. McClean, Lieut.-Col. Alec Ogilvie, R.A.F., and Mr. A. Mortimer Singer. Mr. J. Stewart Mallam and Mr. H. E. Perrin in attendance.

Accounts.—The accounts for the year 1918 were passed.

Auditors.—Messrs. Andrew W. Barr and Co. were elected auditors for the ensuing year.

SPECIAL COMMITTEE MEETING

A Special Meeting of The Committee was held on Monday last, March 31, 1919, when there were present:—Brig.-Gen. The Duke of Atholl, K.T., M.V.O., D.S.O., in the Chair, Mr. Ernest C. Bucknall, Lieut.-Col. John D. Dunville, R.A.F., Lieut.-Col. Spenser D. A. Grey, D.S.O., R.A.F., Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., Lieut.-Col. A. M. Longmore, R.A.F., Lieut.-Col. F. K. McClean, Lieut.-Col. Alec Ogilvie, R.A.F., Mr. A. Mortimer Singer and Mr. H. E. Perrin, Secretary.

Election of Members.—The following New Members were elected:—

Christopher Alfred Bird.
2nd Lieut. William Fenton Chauncey, R.A.F.
Capt. Douglas Darby, R.A.F.
Alfred Hubert Roy Fedden.
George Harris Handasyde.
Capt. Thomas Chadwick Lloyd, R.A.F.
Hubert Melville Martineau.
Capt. Charles William Fairfax Morgan, R.A.F.
Lieut. Jaffray John Walter Nicholson, D.F.C., R.A.F.
Leslie Vincent Pearkes.
Capt. Victor Reginald Scriven, R.A.F.
Lieut.-Col. Henry Thomas Tizard, R.A.F.
Major Wilfrid Ernest Young, R.A.F.

Temporary Honorary Membership.—Mr. George Dobson was elected a Temporary Honorary Member of the Club for one month, viz., to April 30, 1919.

Federation Aeronautique Internationale.—The following delegates were appointed to attend the meeting of the Federation Aeronautique Internationale to be held at the Aero Club de France, Paris, on Friday, April 11, 1919:—

Lieut.-Col. F. K. McClean.
Lieut.-Col. J. T. C. Moore-Brabazon, M.P.
Lieut.-Col. Mervyn O'Gorman, C.B.
Mr. H. E. Perrin (Secretary).

"Daily Mail" £10,000 Trans-Atlantic Flight.—The following further entries for the *Daily Mail* £10,000 Trans-Atlantic Flight were reported:—

Short Bros. Pilot Major J. C. P. Wood.
The Fairey Aviation Co. . . Pilot Mr. Sydney Pickles.
Martinsyde, Ltd. Pilot Mr. F. P. Raynham.

ROYAL AERO CLUB ANNUAL GENERAL MEETING.

The Annual General Meeting of the Members of the Royal Aero Club was held at 3, Clifford Street, W., on Monday, March 31, 1919, at 6 o'clock. Brig.-Gen. The Duke of Atholl, K.T., M.V.O., D.S.O., took the Chair, and was supported by Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., Vice-Chairman. The following Members were present:—Mr. C. H. Alderson, Mr. H. H. Ross Alderson, Mr. Patrick Y. Alexander, Capt. C. E. Bagram, R.A.F., Mr. A. J. A. Wallace Barr, Capt. R. Forbes-Bentley, R.A.F., Lieut. Arthur Bray, R.N.V.R., Mr. Ernest C. Bucknall, Capt. A. M. Van der Byl, Major G. C. Colmore, R.A.F., Surgeon Herbert J. Corin, R.N.V.R., Mr. W. J. Crampton, Capt. G. H. B. Dent, Lieut.-Col. John D. Dunville, R.A.F., Mr. E. B. Falkner, Mr. Alan R. Fenn, Mr. Chester Fox, Major T. R. H. Garrett, R.A.F., Mr. D. George, Mr. C. G. Greenhill, Lieut.-Col. Spenser, D. A. Grey, D.S.O., R.A.F., Mr. J. S. Henry, Mr. D. C. Hutchinson, Mr. Aubrey Hyman, Mr. Bernard Isaac, Mr.

Henry Knox, Major W. J. S. Lockyer, R.A.F., Lieut.-Col. A. M. Longmore, R.A.F., Lieut.-Col. F. K. McClean, Mr. J. Stewart Mallam, Mr. G. H. Mansfield, Major R. H. Mayo, R.A.F., Mr. S. T. Medlicott, Capt. Henry Morris, Lieut.-Col. Alec Ogilvie, R.A.F., Mr. P. S. J. Owen, Mr. Gavin W. Ralston, Mr. F. R. Samson, Lieut. G. F. Singer, Mr. A. Mortimer Singer, Mr. D. S. Stevens, Mr. F. H. Sully, Mr. F. W. Sully, Lieut.-Col. G. L. Thomson, R.A.F., Mr. D. W. Thorburn, Mr. R. A. Wall, Mr. Jack Williams, Lieut.-Col. Warwick Wright, D.S.O., and Mr. H. E. Perrin, in attendance.

The Chairman, Brig.-Gen. The Duke of Atholl, K.T., M.V.O., D.S.O., said that the accounts of Aero Proprietary, Limited, had just been passed by the Shareholders. He would like to point out that no dividends were paid to the Shareholders, and that the shares were held in trust for the Committee of the Club, and no Member or Shareholder was financially interested in the Club.

The Club's Flying Ground at Eastchurch had been taken over by the Government, and the terms were now the subject of negotiation. The Club was now looking out for another ground in close proximity to London.

The Committee had felt for some months that the present premises were not large enough, and had been looking out for a more commodious home for the Club. The Committee had found suitable accommodation, and negotiations were proceeding for the purchase of the premises. If the negotiations were successful it was hoped that the new premises would be available for occupation about August or September.

With regard to the Flying Services Fund administered by the Club, he would like to pay a special tribute to the Flying Services Fund Committee who were in charge of this Fund. During the year the Flying Services Fund Committee had had the assistance of General Warner, General More, Lieut.-Col. Hubbard, Lieut.-Col. Gold and Mr. Chester Fox.

The total funds in hand at December 31, 1918, were £12,802 7s. 3d. During the past year generous contributions were received from the various centres of the Royal Air Force, amounting to nearly £2,000. Donations were also received from many constructors of aircraft.

The demands for assistance greatly increased and financial assistance was given in 64 cases. At the present time the Fund was contributing monthly allowances to 82 dependents.

This Fund, which was started a few months after the commencement of the War, was entirely confined to the Services, but the Flying Services Fund Committee had now under consideration a scheme in connection with civil aviation, particulars of which would be announced later.

The new regulations for Civilian Flying had not yet been issued, but the Club had on several occasions been consulted by the Air Ministry as to these, and it was hoped that when they came into force, they would assist and not retard the progress of aviation in this country. Some of the past activities of the Club would in the future be necessarily undertaken by the civil side of the Air Ministry. He thought this was only to be expected, but at any rate the position of the Club as the sole Sporting Authority would be upheld. The Club was working in perfect harmony with the Society of British Aircraft Constructors. Each body recognised the activities allocated to itself, and so long as this happy position existed the aviation industry, both commercial and sporting, would have their interests well looked after. He would like to congratulate the Society of British Aircraft Constructors on the excellent work done during the short time they had been in existence. Founded in 1916 by just a few firms engaged in the construction of aircraft, they had in a very short time grown up to be a powerful commercial organisation.

During the next few months attempts would undoubtedly be made to cross the Atlantic by aeroplane. It was just as certain that they would be crowned with success. This might be considered an important step in civil aviation, but he thought we must regard it at the present time more in the light of a sporting event, which had been brought about mainly by the generosity and broad-mindedness of Lord Northcliffe, the Vice-President of the Club.

It was of interest to note that the majority of the entries were from this side of the Atlantic with British-built machines. Not only the Royal Aero Club, but the whole world were looking forward with interest to this flight, and

we hoped that the laurels would be gained by a Britisher, flying a British-built machine, with a British engine.

In conclusion, he thought the prospects of the Club were very bright. The Membership was increasing, and as soon as things settled down we all hoped that the sporting side would develop and the progress of aviation for the ordinary purposes of life rapidly increase.

Election of Vice-President and Council.—Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in proposing the election of the Vice-President and Council for the ensuing year, congratulated the Club on having obtained two notable additions to the Council, namely, Admiral Sir David Beatty and Lord Hugh Cecil, M.P. The motion was seconded by Mr. C. G. Greenhill, and the following were unanimously elected :—

Vice-President :

The Rt. Hon. Lord Northcliffe.

Council :

S.A.I. Prince Roland Bonaparte (President F.A.I.).

The Rt. Hon. The Earl of Hardwicke.

The Rt. Hon. The Earl of Lonsdale.

The Rt. Hon. Lord Hugh Cecil, M.P.

The Rt. Hon. Lord Howard de Walden.

The Rt. Hon. Lord Kinnaird, F.R.G.S.

The Rt. Hon. Lord Montagu of Beaulieu.

Admiral of the Fleet the Rt. Hon. Sir Edward Seymour, P.C., G.C.B., O.M., G.C.V.O.

Admiral the Hon. Sir Edmund Fremantle, G.C.B., C.M.G.

Admiral Sir David Beatty, G.C.B., G.C.V.O., D.S.O.

Count Henry de La Vaulx (Vice-President Aero-Club de France).

Sir David Salomons, Bart.

Sir Norman Lockyer, K.C.B., F.R.S.

Professor Sir William Crookes, O.M.

The Rt. Rev. Bishop Welldon.

Martin Dale.

Henry Deutsch de la Meurthe (President Aero-Club de France).

Professor A. K. Huntington.

Committee :

The result of the ballot for the nine vacancies on the Committee was declared as follows :—

Lieut.-Col. John D. Dunville, R.A.F.

Lieut.-Col. Spenser D. A. Grey, D.S.O., R.A.F.

Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.

Lieut.-Col. T. O'B. Hubbard, M.C., R.A.F.

Lieut.-Col. F. K. McClean.

Brig.-Gen. E. M. Maitland, D.S.O., R.A.F.

The Rt. Hon. Lord Northcliffe.

Lieut.-Col. Alec Ogilvie, R.A.F.

Mr. F. Handley Page.

Alteration to Rule 50.—On the motion of Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., seconded by Mr. A. Mortimer Singe, it was unanimously decided to alter Rule 50 as follows :—

"The Subscription for Members elected on or after the 31st day of May, 1919, shall be £7 7s. per annum and for Lady Members £2 2s. per annum or such other sum as may be decided upon in General Meeting and the Entrance Fee £5 5s. or such other sum as the Committee may from time to time determine.

"The Subscription for Members elected prior to the 31st day of May, 1919, shall continue to be £5 5s. per annum and for Lady Members £2 2s. per annum or such other sum as may be decided upon in General Meeting, and the Entrance Fee £2 2s."

A vote of thanks to the Chairman concluded the meeting.

Offices : THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

THE TRANSATLANTIC FLIGHT

DURING the past week no further entries have been received for the *Daily Mail* prize, and the number of probable competitors has been reduced by one owing to the accident to Capt. Sundstedt's flying boat. (It appears that the machine was taken out by Comdr. Czenzki, a Russian pilot, and failed to come out of a spiral 400 ft. up.

Some comment has been caused by the abstention of the French makers, but it is likely that unless the prize is quickly won there will be at least one or two competitors bearing the French colours. It is an open secret that one of the leading firms has been experimenting to this end for some time, but no definite entry will be made until everything is ready for the attempt to be made.

Mr. Hawker and Capt. Grieve, with the Sopwith aeroplanes, arrived in St. John's, Newfoundland, on Sunday, and they are making their preparations to start at 2 p.m. on April 16, in order to take advantage of the full moon, if the weather conditions are favourable.

Mr. Raynham and Capt. Morgan, with their Martinsyde, are now on their way to St. John's. A series of thorough tests, including a ten-hours flight, during which the machine flew from Woking to Southampton and back five times have been made. The "Raymor" has a span of 41 ft., and is 26 ft. long. It is fitted with a 285 Rolls-Royce "Falcon" engine and, carrying 375 gallons of petrol, the weight will be about 5,000 lbs. Capt. Morgan only recently returned from Newfoundland, where he was making preliminary arrangements. It is hoped to make a start towards the end of April.

The Fairey seaplane will be of the 3C type—a biplane having a span of 46 ft. 6 ins. and an overall length of 36 ft. It will be fitted with a 365 h.p. Rolls-Royce "Eagle" engine, and will carry 385 gallons of petrol, sufficient to carry her 17½ hours at 120 m.p.h.

The Short biplane will be of the Shirl type, having a span of 62 ft. and an overall length of 37 ft. It will be fitted with a 385 h.p. Rolls-Royce "Eagle" engine. The 650 gallons of petrol will be carried in a torpedo shaped tank 18 ft. long and 3 ft. 2 ins. in diameter slung beneath the fuselage. It is expected that the machine will be ready for a trial at Gosport in a few days.

The machine will be painted white, with a Union Jack on the tail. Major J. C. P. Wood, the pilot, and Capt. C. C. Wylie assistant pilot and navigator, will sit one behind the other. Their equipment will include electrically heated boots, jackets and gloves and they will also wear special long-distance helmets fitted with wireless telegraphic receivers, all of which are being thoroughly tested before the start. The system of directional wireless will be used and the pilot and navigator will receive messages from the Air Ministry every half-hour.

The U.S. Naval authorities have decided that they cannot compete for a prize given by private enterprise. Nevertheless, the arrangements are being pushed forward for a flight by naval machines—probably three flying boats of the N.C.1 type.

According to the Aero Club of America, a cablegram states that the Air Ministry is considering the Club's invitation to fly one of its airships across the Atlantic to the Pan-American Exposition at Atlantic City in May.

A message from New York states that the British officials in charge of the projected flight from Newfoundland to England say that they may carry several letters from that country, but the cost will be £100 each. The letters must not exceed one ounce in weight each, and the number is limited to 12. Inquiry has not thus far revealed that many Americans are anxious to spend £100 to send a letter to Europe by aerial mail.

The Wakefield R.A.F. Boxing Trophy.

THE winning design for the boxing challenge trophy which Sir Charles C. Wakefield, Bart., is presenting to the Royal Air Force, has now been selected by the judges, and is the work of Mr. F. G. Butcher, of 145, Holly Road, Handsworth, Birmingham. It is a handsome work of art, and we hope to be able to publish a reproduction in our next issue, together with the details of the medals also offered under this scheme.

The conditions governing the competition for this trophy, which have been drawn up in collaboration with the donor

by the R.A.F. Recreational Council, are designed so that it shall be competed for by teams of novices (officers and other ranks) from stations or units. Boxing will be under the rules of the Imperial Service Boxing Association. The date of the first meeting for the trophy has not yet been settled owing to the frequent changes in personnel in units, due to demobilisation. It is hoped, however, to arrange for a date and venue in the near future.

Sir Charles Wakefield is also presenting gold and silver medals for the winners and runners-up in each weight.

LIGHTER-THAN-AIR CRAFT

By LIEUT.-COL. T. R. CAVE-BROWNE-CAVE

THE lecture under this title, delivered on Wednesday of last week by Lieut.-Col. Cave-Browne-Cave before the Royal Aeronautical Society, was extremely well attended, and was followed with the greatest interest by the audience. Brig.-Gen. E. M. Maitland, D.S.O., R.A.F., was in the chair. The paper itself was published in last week's *FLIGHT*, but unfortunately the illustrations did not reach us in time to be included. We have since then received copies of a few of the excellent slides illustrating the lecture, which we now publish. Many of the other illustrations would have been of great interest, but possibly the Censor, who is not yet demobilised, considered it inadvisable to have these published.

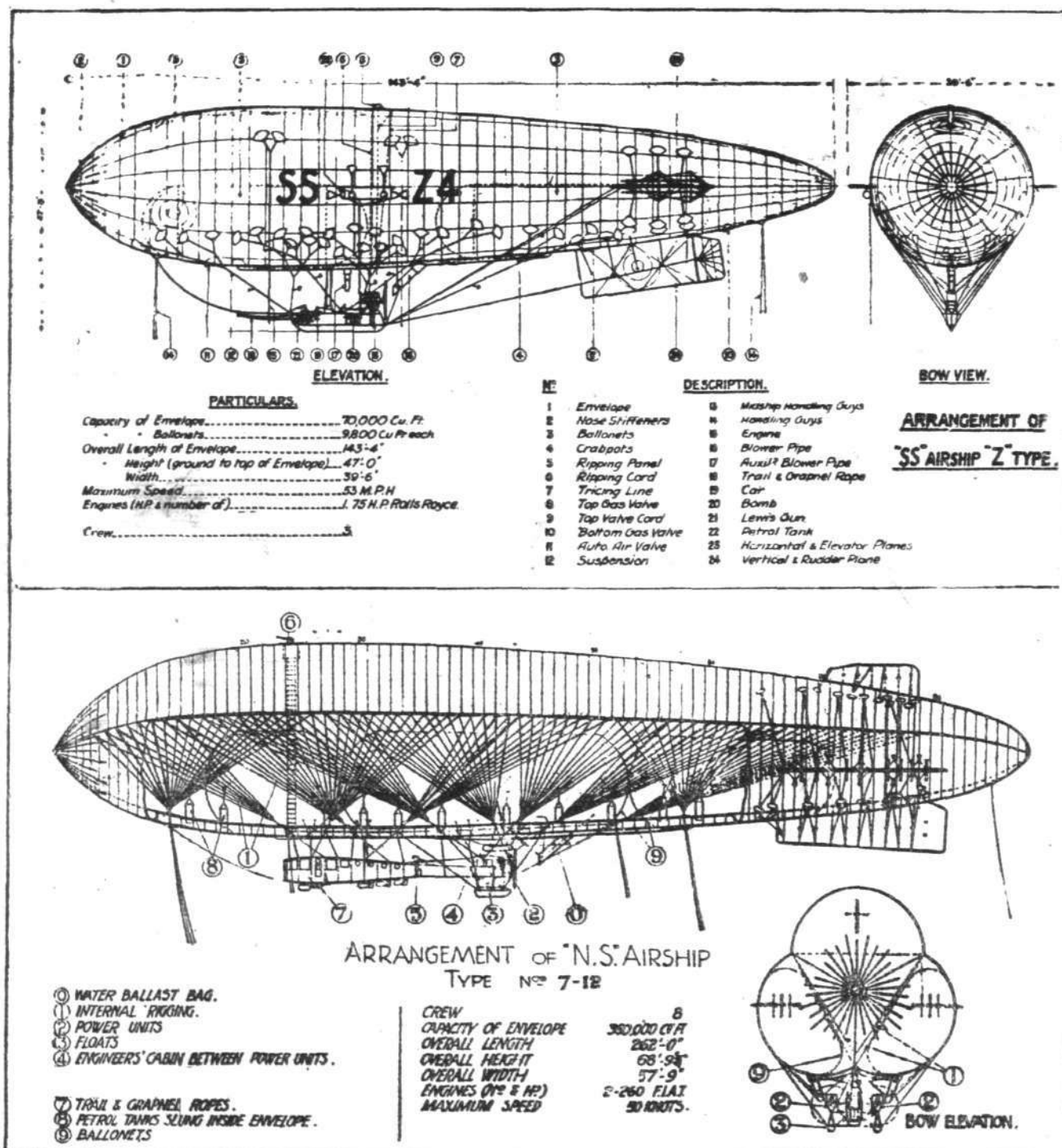
The Discussion

During the discussion which followed the lecture, Col. Cave came in for a fair amount of criticism, some of his critics being of the opinion that he was a little optimistic where the non-rigid type of airship is concerned, and expressing some disappointment with the somewhat sketchy nature of the part of the paper dealing with the rigid type of airship.

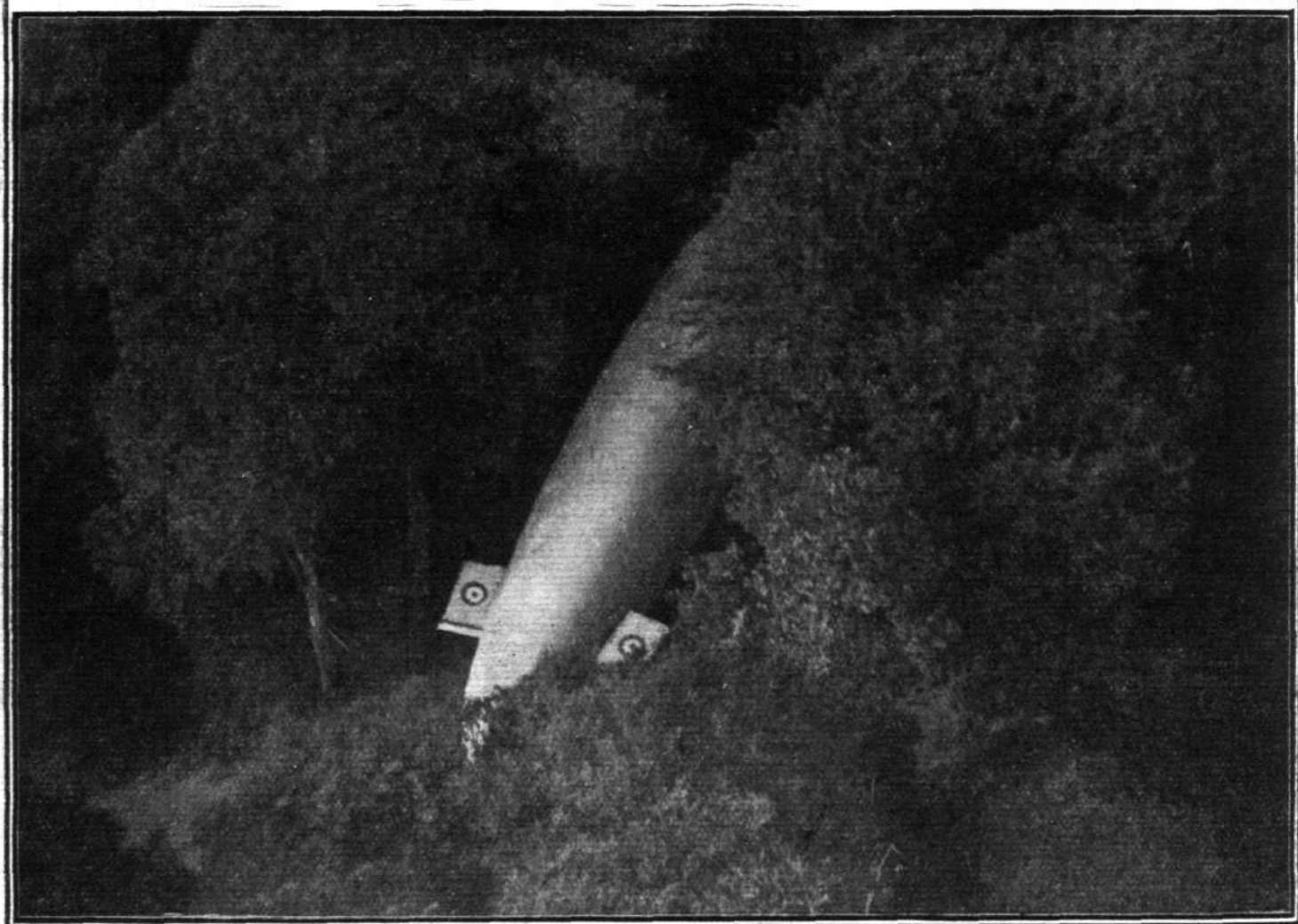
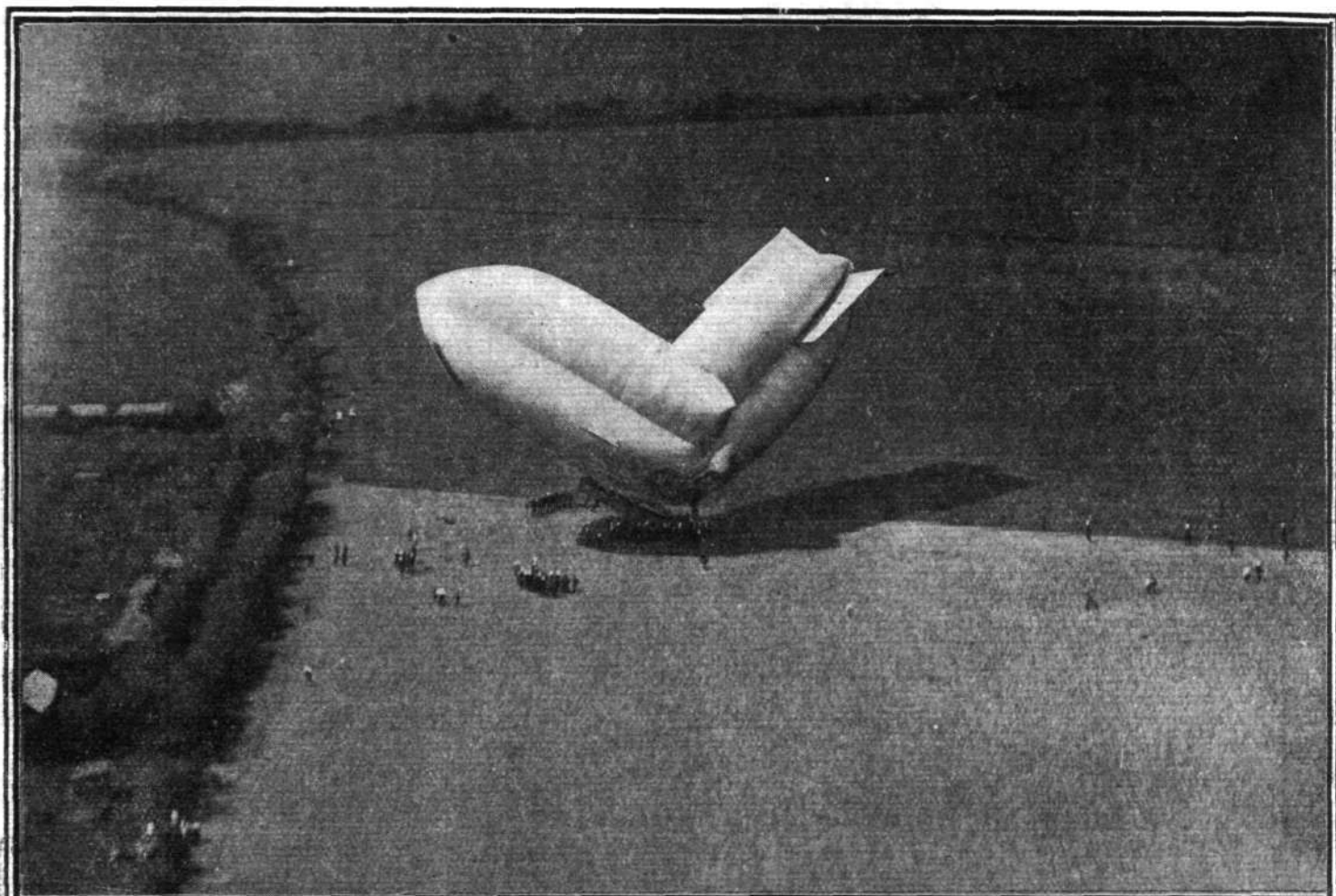
Mr. Cole, the well-known airship designer, said that although

the lecturer had stated a very simple formula for the lift of an airship ($\text{Lift} = V (P_a - P_n)$, where V = volume of gas space, P_n = density of gas, and P_a = density of air displaced), it was not such a simple matter to apply the formula, as the lift of hydrogen varied greatly, some experts putting it at 70 lbs./cu. ft., others at 68, while the lecturer had put it at about 64 lbs./cu. ft. As regards the percentage of lift obtainable with the two types, Mr. Cole thought the lecturer was optimistic with regard to the non-rigid, and considered that a carrying capacity of 50 per cent. of the gross lift was too high for the non-rigid, he personally being more inclined to put it at somewhere about 38 per cent.; while for the rigid type the disposable lift could be placed considerably above 50 per cent., and the Germans were understood to be contemplating the possibility of a disposable lift of between 70 and 80 per cent.

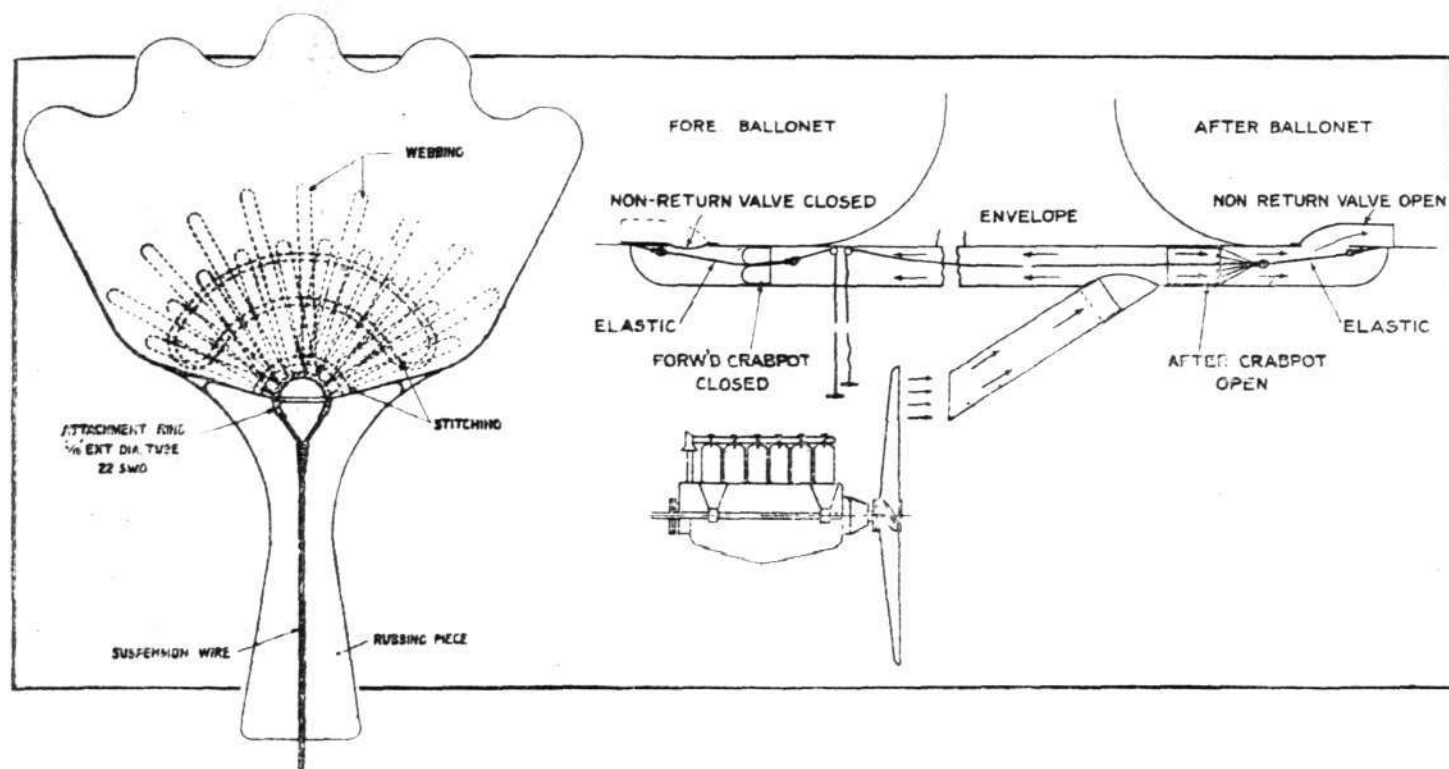
Maj. Pritchard, who was stated by the Chairman to have had very extensive experience in piloting of airships, said that there was no use in comparing the two types unless due consideration was given to speed. If this were done, he said, it would be found that by the time the non-rigid had been



LIGHTER-THAN-AIR CRAFT: Two illustrations from Col. Cave-Browne-Cave's lecture



LIGHTER-THAN-AIR CRAFT: The photographs illustrate two points in Col. Cave-Browne-Cave's lecture. The upper picture shows one of the advantages of non-rigid construction. This airship buckled owing to loss of internal pressure, but was landed safely and restored to her original shape by again increasing the pressure. The lower illustration shows a view from above of an airship shelter formed by trees



LIGHTER-THAN-AIR CRAFT.—On the left is shown the manner in which a rigging cable is attached to the envelope, and on the right the duct and fabric valves by means of which the pressure in the ballonets of a non-rigid airship is regulated

brought up to the speed of the rigid she would have a disposable lift which would be a negative quantity—in other words, she would not lift. On the other hand, Maj. Pritchard said, if the maximum speed of the rigid were decreased to that of the non-rigid, the disposable lift of the former would be very much greater than 50 per cent., owing to the fact that she could be driven by lighter engines, which would require less fuel. To his mind, the rigid had it all its own way, both for speed and radius.

Maj. Heckstall Smith, of the Nieuport Aircraft Co., said that it seemed to him that it was impossible to compare the two types, as undoubtedly each had its advantages and uses. He did not see why there should not be room for both types, since surely for shorter distances the non-rigid would be quite capable of doing very good work, leaving it to the rigid type to do great trans-Atlantic and trans-Continental journeys.

Professor Walpole agreed that there was work to do for both types, and thought that a great number of public duties could and should be done by airship. For instance, such work as exploration could be carried out very efficiently by means of small airships, and it would in this way be possible to do survey work in a small fraction of the time taken when this work was carried out in the ordinary way. Among the many duties that could be performed by airship he mentioned survey work of agricultural districts, counting sheep and locating wild horses in Australia, etc. He also said he would like to be informed how it was that the Zeppelin raiders could manage to reach such great heights.

Mr. Gibbon, of the Airship Department of the Admiralty, called attention to the fact, sometimes lost sight of lately, that the Censor is still to be reckoned with, and pointed out that although much information had been passed for the lecture there was a great amount of material which could not be made use of by the lecturer, and that no doubt this fact was to a great extent responsible for any omissions in the paper.

The Chairman, Gen. Maitland, before asking the lecturer to reply to the points raised by those who took part in the discussion, expressed the opinion that there is room for all, and that for certain functions the smaller non-rigid airship is undoubtedly quite suitable, while for long distances at high speeds the rigid will probably score. He said that in view of the criticisms raised on the score that the rigid had

not been given sufficient space in Col. Cave's paper, the subject was such a large, and such an interesting one that he would suggest that at some future date a paper dealing with the rigid airship should be read before the Royal Aeronautical Society, a suggestion which was greeted with applause by the audience. Gen. Maitland then mentioned that the Government is now carrying out experiments with airships, the results of which will be of benefit to the development of commercial airships, and he mentioned also that the two rigid airships R. 33 and R. 34 will make an attempt to do the trans-Atlantic journey, not in competition with any of the other entrants in that race, but simply to gather experience in long-distance airship cruising.

The Lecturer, in reply to his critics, said that he did not intend to minimise the utility of the rigid airship, but that the non-rigid airship was in many ways more efficient for certain work which did not entail very long journeys. He quite admitted that the rigid airship would score for long trips. He had been criticised for basing his figure for disposable lift on a non-rigid airship of 500,000 cu. ft. capacity. He said that, from such figures as he had available, this assumption was quite fair, and that the step from the 400,000 cu. ft. airships already in existence to one of 500,000 cu. ft. was in reality not very great. With regard to some of the figures quoted by the supporters of the rigid, the lecturer said it appeared to him that these bore traces of having come from Germany, in which case one might be excused for considering them to be somewhat on the optimistic side, and he was, he said, reminded of the old lady who was buying a motor car and expressed a strong desire for one particular make of car. When asked why she particularly wanted that car, the lady answered, "Because they speak so well of it in the advertisements."

In reply to the question raised by Professor Walpole, Col. Cave said that the Zeppelins, in order to be able to reach such great altitudes, had to throw overboard water ballast, literally by the ton, and that this ability to climb was purely a question of disposable lift. As regards the lift of hydrogen, the lecturer quite agreed that this varied considerably according to purity, and stated that the figure employed by him—64.5 lbs./cu. ft.—was a fair average in practice, obtained by simultaneous reports from the airship stations all over the country.

Aerial Services in Germany

INFORMATION received in Denmark from Berlin is to the effect that the regular aerial postal service, which has hitherto been carried on by a German aircraft company between Berlin, Leipzig, and Weimar and between Berlin and Hamburg, will

be extended during April to Hanover, the Rhineland, Westphalia, Frankfurt, Breslau, and Warnemunde. The service to Warnemunde will be particularly important for passenger and postal traffic to Scandinavian countries. Warnemunde will also be the starting-point for oversea traffic by seaplane.

AIRISMS FROM THE FOUR WINDS

"SECRETARY of State for Air" is distinctly an advance in official nomenclature. It is euphonious and comprehensive.

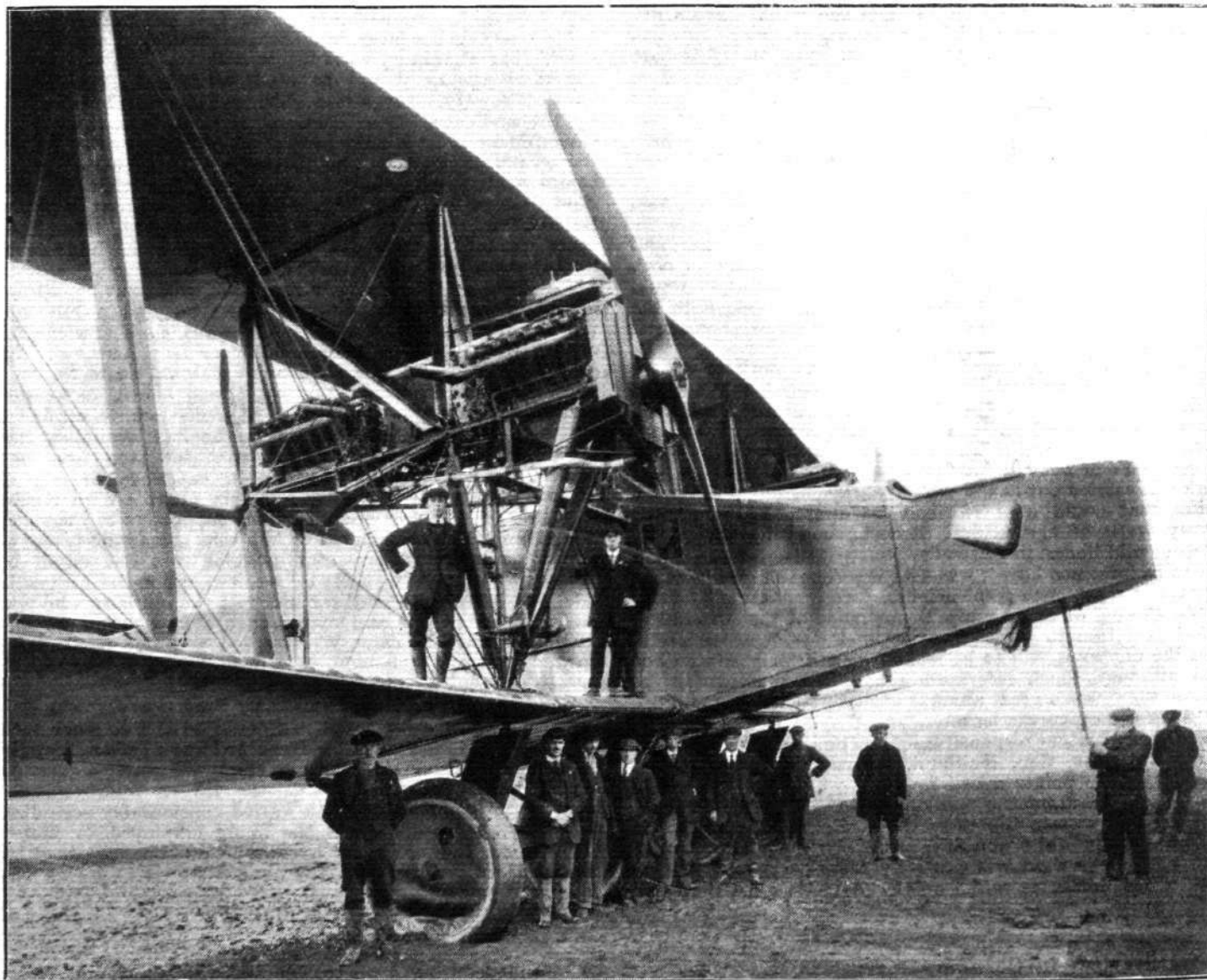
It is good hearing that the Air Force Section of the Imperial War Museum is to really be an enduring record of the work of the R.A.F. during this great War, and the endeavour is, moreover, to gather together such a collection of things aerial as to make this section a veritable museum of progress in the air for 1914-1918. To this end the R.A.F. have established a dépôt for the reception of war relics and trophies of all sorts at Sports Bank Hall, Sports Bank Street, Catford, S.E. 11, where a large amount of interesting and valuable material has already been collected. The collection includes relics of air combats, models, and a large number of trophies from Zeppelins and notable enemy machines from France, together with portions of equipment used by British officers in escaping from captivity. It is intimated that the president of the Royal Air Force Section will be glad to receive trophies and relics of all kinds, and photographs connected with the R.N.A.S., R.F.C., and R.A.F., at the above address.

In this connection not the least interesting "exhibit" which is likely to be staged at the British Scientific Products Exhibition to be held in July at the Central Hall, Westminster, will be the commercial preparation of helium, the

non-inflammable gas, which, but for the armistice, was to have played such an inspiring part, when employed for the inflation of our mammoth airships, in bringing home to the Huns what airship bombing really meant, when scientifically applied. They started this game little thinking what the ultimate consequences to them would be. Helium was surely beyond their dreams as a means of possible retaliation, when, as one scientist has put it, at the commencement of the War one might as well have thought of paving a street with diamonds, as using helium for airship inflation. But necessity has once more proved the mother of invention, and be it recorded for all time that it is to the credit of British chemists that the problem of production in quantity, at a very moderate commercial cost, was solved.

FROM America comes the encouraging news that an ambitious scheme for providing a landing place for aircraft in New York, when the Atlantic flight has become a common affair, was outlined at a meeting at the Aeronautical Exposition by Mr. T. Kennard Thomas, a well-known engineer and aerial expert. The suggestion is that a coffer dam 4 miles long and 1 mile wide should be built on to the battery extending out into the upper bay. This could be used for buildings of a uniform height on the top of which would be a hangar covering the entire area.

The building of the wall, erection of the buildings and



HOW THE ROLLS-ROYCE ENGINES ARE PLACED IN THE HANDLEY PAGE 'PLANES.—Note the two front engines drive two-bladed tractor screws, whilst the two rear engines drive four-bladed propellers

hangar, would cost perhaps \$100,000,000, according to Mr. Thomson. The work would take from three to five years and would give employment to 50,000 men.

SOME coffer dam, any-way.

It's as well that aerial mail services, just at the present period of development, when found should—*à la* Capt. Cuttle—be made a note of. Therefore we record a South African item in this connection, published by Mr. P. Hayman, of Long Lane, in the City, who received in January an air-mail post card from a friend in Cape Town with a covering letter in which he writes:—

"The aerial post card is genuine. We had aerial post here for one month. A major had charge of the aeroplane and made regular trips from Cape Town to the towns near. The cards were sold at 6d. each for the benefit of the Red Cross and were franked by an ordinary id. Government adhesive postage stamp. They were posted in the ordinary way. The post office cancelled the stamp, put them in the post bags, and delivered the bags to the major, who in turn delivered them by aeroplane to the post offices in the various towns, whence they were delivered in the usual way by the post-man."

This card, presented by Mr. Hayman to the War Stamps Exhibition, now rests at the Philatelic Galleries, 110, Strand, where it can be seen by anyone interested.

CARIBOU hunting by aeroplane, as originally and very ingeniously advocated a few weeks ago in a fascinating article in *The Times*, would now, according to Lieut.-Comdr. John G. Millais, R.N.V.R., appear to be a "wash-out." So those sporting pilots who had made all their preparations to join this very novel adventure in Canada, as outlined by Mr. W. H. P. Jarvis, can "dismantle" all their hunting plans. According to Comdr. Millais, he "can state without fear of contradiction that, whilst it would be possible for aeroplanes operating from Hudson Bay or Athabasca to find the migrating herds of the so-called barrier-land caribou during their southern migration in the autumn (which at this season extends as far south as the north of Atillery Lake), it would be absolutely impossible for any fleet of aeroplanes to drive them in any given direction—even if it were possible to carry a number of drivers. It is well known to naturalists and

hunters that, whilst these deer follow certain lines of migration chosen by themselves, it is quite futile to try to drive them in any required direction. . . . To get those thousands of deer driven to the shores of Hudson Bay, and in so doing to separate the sexes, is the dream of some enthusiast who knows nothing about caribou."

There is also the point for consideration, of thus slaughtering herds of game animals to their ultimate extinction.

HERE'S a matter which, if the aerial way is absorbed by that latest bureaucratic octopus, the Ways and Communications Bill, might well give work, over a few hundred years, more or less, for a special Department under the control of Sir Eric Geddes. In a recent article in the *Mail* entitled "Earth's New

Year's Day," the statement is ventured that "in the revolution of the world the air is carried with us, or all things would be swept off the face of the earth." This has brought forth the following from a correspondent who says:—"This statement reminds me of a problem that none of my scientific friends has been able satisfactorily to answer. It is this: 'To what height above the earth would an airship have to rise where, if it hovered in ether, its passengers would behold the world travelling below them?'

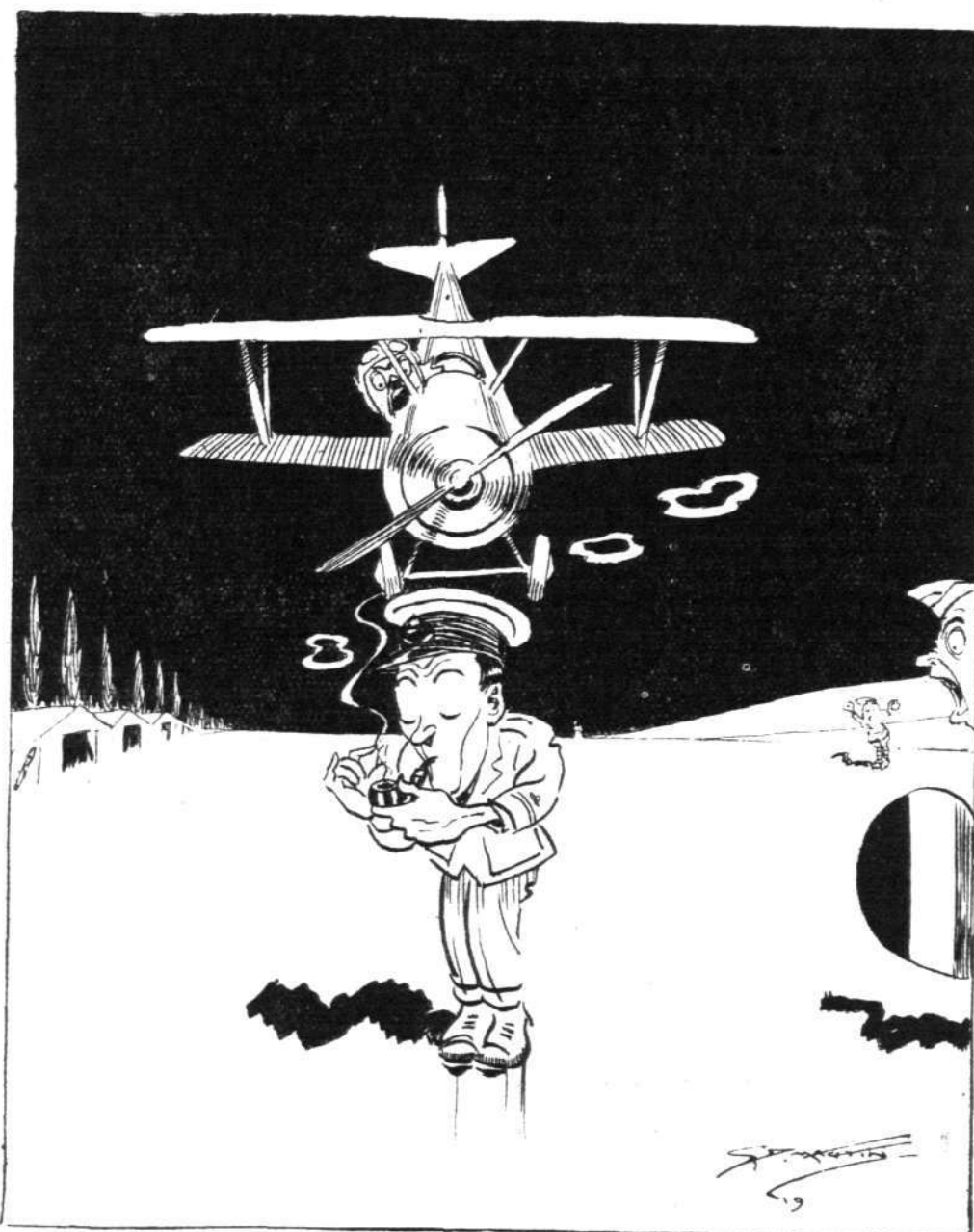
"Scientific people evade the problem by saying that an airship could not float in ether, and that its passengers could not live. But if the airship could thus ascend and its passengers could live and observe, what would they see?"

By way of a further instalment for investigation, the same correspondent continues:—

"Here is another problem that always reduces my scientific friends to mental chaos. Suppose a pipe, with a bore little larger than the thickness of a man's body, were pierced through the earth and a ladder ran through the length of the pipe. Assume a man starts through the pipe from London to an Antipodean island. He descends the ladder feet foremost, and he is going downwards until he reaches the centre of the earth.

"When he reaches the centre of the earth he, presumably, will thenceforth be going upwards, until he emerges at the Antipodes. But how can a ladder on which one is *descending* become a ladder on which one is *ascending*? Furthermore, how could one go up a ladder feet foremost? Whenever I put this problem to scientific people they try to change the subject."

Crime in the Air Force.



Obstruction

We give it up. We'd rather go by air, or walk round the edge.

HERE'S a rejoinder by "N.C.O. Pilot" to his critics of last week:—

"Re 'Flight Cadet's' corrections of 'N.C.O. Pilot.' He states that the classification of N.C.O. Pilots and Flight Cadets depended on their conduct and capabilities. I would point out that this is not the case, as I was one of a certain R.F.C. Cadet Squadron at St. Leonards in October, 1917, which Cadets were all made N.C.O. Pilots, the only reason given being that by an Air Ministry Order a certain percentage of Cadets would, in future, be made N.C.Os. for economy's sake. Further, a certain well-known R.F.C. officer of high field rank, speaking to this squadron on the final parade, stated that it was no disgrace to us at all and we were being made N.C.Os. through no fault of our own.

"I might also mention that there was not a single failure in the school of military aeronautics examination, and many of these N.C.O. pilots have done exceedingly well in France and Belgium, having received commissions in the field as well as decorations."

On the west wall of the Great Hall, as you leave Lincoln's Inn by the Chancery Lane gate, you can see the disfiguring pits and pockmarks left by the Teuton raider, who came stealthily by night, and departed with exceeding swiftness. We who live there do not approve of the defacement of the ancient building, grey as a barrister's wig. We wonder what Thurloe (secretary to the roundhead Cromwell, who lived hereabouts), John Donne, Sir Thomas More, Prynne, Brougham, and the rest of them would say to it? Good, mouth-filling oaths, we'll warrant you.

They would put those leather-jerked Germans in the same category as the vandal Lord of our day, who, not content with embarking on a crusade against everything lovely at St. Albans, has openly pronounced his pitiful judgment that the curious and noble gate (bearing the date of 1518, and the arms of Bluff Harry with the garter, "having on the dexter side the purple lion of Lacy, Earl of Lincoln, and on the sinister the arms and quarterings of Sir Thomas Lovell, who built the gate when he was a bencher of this Inn") should be done away with, proposing to substitute for it some glazed and decorous horror after the style of the Peabody Buildings. You may be sure that all the silk gowns in the quadrangle rustled like so many aspens when they heard of it, and "steps" were taken to avert the contemplated sacrilege.

BUT if we were able to stop lordlings with *l'art nouveau* ideas, we could not stay that ill bird, the Gotha. He has left his foul mark here, and eleven of his bombs dropped within a radius of 150 yards of Gray's Inn. The majority were incendiary, and the explosive ones which fell fortunately did little harm to the ancient fabric. Gray's Inn Hall, which is over 300 years old, narrowly escaped destruction. A bomb fell through the roof of the Robing Room next door. The beautiful Armada oak of the Hall itself—where Shakespeare's "Comedy of Errors" was first played, and where the virgin Queen was a frequent visitor—escaped unharmed.

RESETTLEMENT OF

THERE are many officers and men of the R.A.F. who are demobilised or are about to be demobilised.

In order to assist those who are undecided or are seeking advice as to their prospects in civil life, the Editor has arranged for an expert, with wide experience of service, industrial and educational conditions, to give advice to those who may solicit it through the medium of this Journal.

Applications, which must be in writing, should be marked *Resettlement*, and addressed to the Editor, FLIGHT, 36, Great Queen Street, Kingsway, W.C. 2. They will be dealt with in these columns, as far as possible, in rotation.

E. J. W., FLIGHT CADET.—A large number of experienced pilots are at present seeking employment with civilian firms. Further, the scheme for obtaining and training pilots for civilian work has not yet been settled. They may have to be trained by the military authorities and be relegated to the Reserve Forces, or they may be trained direct by the firms engaging them.

New Cambridge Professor

Mr. C. E. Inglis, Fellow of King's, who has been Demonstrator and University Lecturer in Engineering, has been elected Professor of Mechanism and Applied Mechanics at Cambridge, in succession to the late Professor Bertram Hopkinson.

The old legislators who lived here before us little thought of all this. They roundly forbade "beards of more than fourteen days' growth" under a penalty of three and fourpence, and they legislated against the wearing of cloaks, rapiers, long spurs or hair (and this last touches some of us very nearly, for the Bill still stands!), but they never dreamed of fire rained from above.

Else, you may be sure, they would have legislated against that!

THE Fleet Street paragraphist who lives over the cook-shop because of the sustenance afforded by the odours wafted upwards gratis saw another five shillings swim within his ken. "Child Aeroplane Inventor," wrote he, "three paper aeroplanes that can do 'stunts' have been shown to us" ("us" implying the cat belonging to the marriage-bureau two flights down, that drifts in occasionally in search of scraps); "they were invented by a schoolboy who has produced similar toys for his own and his friends' amusement ever since he was ten."

Old stuff: old as the nib-and-paper yacht race down the slope of the desk, or the pen-holder squeaker. We have made them ourselves in our nonage.

BUT this is better: "Fifteen shilling aeroplane flights" "Rugby residents may joy-ride this summer." That has a more succulent flavour, but we think he might have predicted the time when the shop that is always talking about "The Policy of this House," will mark 'em down to fourteen and eleven-three, or present them to purchasers of goods over a sovereign in value. (If the firm in question avails itself of the suggestion, our compensation will take the form of a season-ticket to the American ice-cream soda bar.)

WHATEVER our personal opinions of Mr. Winston Churchill, it is impossible to withhold admiration of his resiliency. After the prognostications about swarms of hornets which failed at the time to materialise, he is once more in fine feather with his swarms of "flying-angels," a term worthy of the "Daily Powder-Puff." But then, Mister Churchill was a journalist. No man can live it down!

THE Atlantic flight has been a god-send to the Nineteen-nineteen Homers. "The N.C. type, now at Hampton Roads—" ("No cop," did you say? Certainly not; "Navy Curtiss")—"will make the attempt. It is equipped with three Liberty motors of 400 horse-power each. These motors of the tractor type will pull the machine, and, if necessary, it will be equipped with another motor of the pusher type."

And, "if necessary," with an Auto-Wheel.

THESE women, they take the bread out of our mouths. Here's one asking Armstrong-Whitworth whether she can have a job on the new R. 33—as a stewardess. We should have thought that it was apparent, having in mind that that stewardesses exist only to carry little tin basins, that—but no matter!

R.A.F. PERSONNEL

Until announcements appear settling these questions, you will be best advised to either obtain outside employment for the present or to apply to the Appointments Department of the Ministry of Labour for a course of aeronautical engineering of a more extensive and thorough nature than that given at the late schools of aeronautics.

R. E. S., CHIEF MECHANIC (ENGINEERS).—Aerial transport companies are not likely to engage personnel on any large scale at present, as the policy of the Government with regard to civil aviation is not yet sufficiently developed.

If you are a skilled engineer you will be best advised to obtain immediate employment in your normal occupation. You may find good openings in commercial aviation later on. Amongst the advertisements in this journal you will note those of civil aviation companies.

You should apply to these, giving full details of your pre-War engineering training and experience as well as your Service experience.

Reconnaissance on Archangel Front

In an account of operations on the Vaga sector of the Archangel front, which has now reached London, it is stated that although the temperature rendered aerial reconnaissances extremely difficult valuable assistance was rendered throughout by the R.A.F.

Personals

Casualties

Maj. HUBERT F. FISHER, youngest son of J. A. Fisher and Mrs. Fisher, of St. Kilda, Gloucester, died at the R.A.F. Hospital, Eaton Square, on March 22 at the age of 34, of pneumonia following influenza.

Lieut. CLARENCE HENRY MARCHANT, Croix de Guerre et Palme, second son of the late W. W. and Mrs. Marchant, of "Tickners," Hawkhurst, Kent, was accidentally killed on March 3, at the age of 25, while instructing in aerial fighting in Egypt.

Married

Lieut.-Col. A. W. H. JAMES, M.C., Hussars and R.A.F., son of Henry A. James and Mrs. James of Hurstmonceux Place, Sussex, was married on March 27, at St. Margaret's, Westminster, to BRIDGET, elder daughter of the late Mr. MURRAY GUTHRIE, M.P., and Mrs. Guthrie, Stirling, of Torosay Castle, Isle of Mull.

Capt. A. MANSFIELD TIDEY, R.A.F., was married on March 25 at Holy Trinity Church, Bembridge, I.O.W., to LUISITA MARY GOODALL.

To be Married

A marriage has been arranged, and will take place on April 12 between Captain FREDERICK RUSSELL ARTHUR, R.A.F., eldest son of Mr. and Mrs. Frederick Arthur, of Surbiton, Surrey, and ALICE MARY, daughter of Paymaster-Captain STANLEY E. ELLIOTT R.N., and of Mrs. ELLIOTT, of Sherwood, Saltash, Cornwall.

The marriage arranged between Capt. EVELYN C. W. FITZHERBERT, D.S.C., R.A.F., and Miss ENID WOOLLRIGHT will take place on Tuesday, April 8, at 1.30 p.m., at St. Peter's, Cranley Gardens. All friends will be welcome at the church.

The engagement is announced between Lieut.-Col. JAMES McCRAE, Seaforth Highlanders and R.A.F., third son of Mr. and Mrs. John McCrae, of Glasgow, and HYLDA, daughter of the late JOSEPH and Mrs. WATSON, of Newcastle.

The marriage arranged between Major R. WHIDDINGTON, R.A.F. (M.A., D.S.C., Fellow of St. John's College, Cambridge), son of Richard Whiddington and Mrs. Whiddington, of 8, Bigwood Road, N.W. 4, and KATHIE, eldest daughter of

ALEXANDER REOCH GRANT and Mrs. REOCH GRANT, of 3 Bigwood Road, N.W. 4, will take place on the 9th inst.

A marriage has been arranged, and will shortly take place, between Mr. ARTHUR WETHERBY WILLIAMS (late R.A.F.), only son of Thomas Wetherby Williams and Mrs. Wetherby Williams, of Mount Pleasant, Ilfracombe, and HELENE SONIA RAYMONDE DE STOMPH, only child of His late Excellency General Baron Antoine de Stomph and of Baronne Sophie de Stomph, née Comtesse Zyndram Kovstialkovsky.

The engagement is announced between Capt. W. H. SUGDEN WILSON, West Somerset Yeomanry, attached R.A.F., second son of Mr. W. H. Wilson and the late Mrs. Wilson, of Hexgreave Park, Southwell, and LENA, widow of Mr. L. A. N. SLOCOCK, 10th King's Liverpool (Scottish) Regt., and third daughter of Mr. and Mrs. Arthur Cook, of Oaken Grove, Marlow, and of Liverpool.

Items

It was announced in the *Court Circular* of March 27 that the PRINCE OF WALES, accompanied by the PRINCE ALBERT, and attended by Captain the Hon. Piers Legh and Major Louis Greig, visited the Handley-Page works at Cricklewood during the morning.

Would any members of 52 Squadron R.A.F., returned prisoners, or others who were over the enemy lines between Albert and Roye on the afternoon of March 26, 1918, or have any knowledge of the fate of Sec. Lieut. T. H. BUSWELL or Lieut. C. E. WHARRAM, of R.E., 8, No. 5052, kindly write to Mrs. Allnutt, Drayton, Wallingford?

HUBERT W. RANSOM, Sec. Lieut., R.F.C., 70th Squadron, missing March 27, 1918, flying Sopwith Camel No. C/8234, Albert area. Any information gratefully received by his father, Mr. F. Ransom, The Chilterns, Hitchin.

Capt. SYDNEY PHILIP SMITH, Flight-Commander, 46th Squadron, was last seen on April 18 over Lamotte, flying a Camel O 6491. Will repatriated officers and men who can give information concerning this officer please write Mr. Arthur Smith, Morningside, Aldershot?

The will of Sec. Lieut. GEORGE EDWARD HUNT, K.O.Y.L.I., of Trafalgar Terrace Coatham, Redcar, Yorks accidentally killed while flying at Stonehenge, has been proved at £12,654.



Prizes for Safety and Comfort.

THE *Echo de Paris* is offering £12,000 in prizes for a competition in which safety and comfort will be the chief considerations before the judges in making their awards.

The course will consist of some 20 stages totalling 2,500 miles. It will cover the principal towns in France and stretch into all neighbouring countries except Germany.

Seaside Flying Trips

FOLKESTONE has arranged for flying trips to coast towns and Boulogne to be made from the Victoria Pier at Folkestone, and it is hoped that Lord Radnor will be the first passenger.

The Town Clerk of Dover has raised the point as to whether a corporation has power to license aeroplanes for traffic, and the matter has been referred to the Air Ministry.

It is hoped to start a service between London and Harrogate in May.

Arrangements have been made by the Ramsgate Corporation for seaplane trips for visitors. Passengers will be ferried from the sands to the machines.

The Skegness (Lincolnshire) Urban District Council has decided to grant the Navarro Aviation Co. the sole right of flying aeroplanes from the beach during the season.

The Transvaal Aero Union

At a meeting presided over by the Mayor, at Johannesburg, on March 27, it was decided to form an Aero Union of the Transvaal, the objects of which are "the education of the people in the development and possibilities of aeronautics; to encourage the establishment of aerial services of all kinds; to foster under its auspices the formation of aero clubs in different centres; to associate itself with similar institutions throughout the country, and generally to promote the interests of aviation in this country." Lord Buxton was elected

honorary president, and Mr. Sturrock, President of the Chamber of Commerce, was elected chairman.

Aeroplanes Instead of Patrol Boat

REFERENCE was made some time ago to the decision of the New York City Police to develop an aeroplane section so that it can take over much work now performed by patrol boats. It is now stated that it will be necessary to have seaplanes as well as aeroplanes. The men will form part of the police reserves, serving without pay, except for service expenses and uniforms, which will be provided by the city. Five landing places have been secured in Greater New York.

Long Distance Pilotless Flight

For some time experiments have been carried out in various countries with the object of controlling aircraft from the ground, and according to the *Journal* a French machine has succeeded—on a prescribed course, with certain specified detours—in covering a distance of 180 kilometres, and in landing, when required, in a certain aerodrome.

Mr. Baker, the U.S. Secretary for War, states that a device invented in America makes it possible for an aeroplane, without a pilot, to travel 100 miles and land close to a designed post.

Aeroplane for Ranch Manager

For the use of the manager of his ranch in Montana, which extends over 150 miles of territory, Mr. J. P. Morgan has bought an aeroplane and engaged Mr. Erhardt Schmitt to pilot it.

Mr. Schmitt, who has been in the American Air Service, is also a wireless operator, and it is proposed to fit up wireless stations at intervals on the ranch so that the manager, while making his rounds, can keep in constant touch with every part of the territory under his supervision.

THE ROYAL AIR FORCE

London Gazette Supplement, March 21

Administrative Branch

The following are transfd. to Unemployed List:—Sec. Lieut. J. T. Brumwell, Sec. Lieut. R. C. Dickinson, Lieut. W. C. Foster, Sec. Lieut. G. T. Johnston-Smith, Sec. Lieut. (actg. Lieut.) J. P. Muller; March 5. Sec. Lieut. R. W. Napier; March 6. Sec. Lieut. E. F. Askew, Sec. Lieut. C. Hepworth, Sec. Lieut. G. F. Moseley; March 7. Sec. Lieut. C. Appleby, Sec. Lieut. J. J. McNamara, Maj. C. E. Norris, Sec. Lieut. T. Waitt; March 8. Lieut. J. E. Arnott, Lieut. G. B. Barker, Lieut. E. L. Humphreys, Capt. L. J. Robertson; March 9. Capt. T. D. McMeekin; March 10.

Capt. H. G. Waterall relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 22. Lieut. H. F. L. Codner relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 22.

The following Sec Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—F. C. Arundel, H. Ord; March 22.

Sec. Lieut. (Hon. Capt.) A. A. McLachlan (Capt., Sea. Highrs.) relinquishes his commn. on account of ill-health contracted on active service; March 22.

The notification in *Gazette* July 23, 1918, concerning Lieut. (Hon. Maj.) A. F. Douglas is cancelled.

Technical Branch

Lieuts. to be actg. Cpts. whilst employed as Cpts. (Grade B):—N. C. Watt; Oct. 22, 1918. W. F. Mytton, J. M. R. E. St. Amory; Dec. 1, 1918.

Sec. Lieut. (actg. Lieut.) A. W. Brittain to be actg. Capt. whilst employed as Capt.; Jan. 12.

Lieuts. (Ad.) to be Lieuts. (Grade B):—S. T. Stephens; July 9, 1918.

Lieut. H. P. Beasley to be graded for pay as Lieut. whilst employed as Lieut. (Grade A); Nov. 1, 1918.

Sec. Lieut. H. Woffenden to be actg. Lieut. whilst employed as Lieut. (Grade A); Oct. 1, 1918.

Sec. Lieuts. to be actg. Lieuts. whilst employed as Lieuts. (Grade B):—E. S. Bullen; May 21, 1918. J. K. Shrimpton; Dec. 1, 1918.

The following are transfd. to Unemployed List:—Capt. J. C. Beddard, Lieut. J. P. White; Jan. 21. Sec. Lieut. (actg. Lieut.) J. Mackie; Jan. 31. Lieut. G. Barnett, Sec. Lieut. (Hon. Lieut.) W. H. Jones; Feb. 1. Lieut. S. J. Broderick, Sec. Lieut. W. E. Palmer; Feb. 4. Lieut. S. W. Bunting, Sec. Lieut. J. G. Plester, Lieut. (Hon. Capt.) W. Redmond; Feb. 5. Lieut. (actg. Capt.) H. N. Charles; Feb. 6. Sec. Lieut. H. A. Kauper; Feb. 10. Lieut. (actg. Capt.) J. A. P. Martin; Feb. 12. Lieut. (Hon. Capt.) (actg. Capt.) J. C. Wallace; Feb. 14. Sec. Lieut. M. Laidlaw; Feb. 15. Sec. Lieut. T. L. Lewis; Feb. 17. Capt. (Hon. Maj.) W. R. G. Atkinson; Feb. 19. Lieut. (actg. Capt.) E. J. Edwards; Feb. 20. Sec. Lieut. F. G. Brooker; Feb. 21. Sec. Lieut. H. Philp; Feb. 22. Capt. A. W. Empson; Feb. 23. Maj. C. J. Murfitt, O.B.E.; Feb. 24. Sec. Lieut. A. H. Gregory, Sec. Lieut. E. G. Terraneau; Feb. 26. Lieut. J. R. Evans, Capt. L. A. Goss, Sec. Lieut. (Hon. Lieut.) (actg. Lieut.) G. D. G. Hake; Feb. 27. Sec. Lieut. G. Burrows; Feb. 28. Capt. J. W. Eckford, Lieut. J. N. Mearns; March 1. Sec. Lieut. S. S. Dungey, Sec. Lieut. H. P. Griffiths; March 2. Capt. A. E. Blackmore, Sec. Lieut. W. F. Boyd, Sec. Lieut. E. W. Davis, Lieut. J. D. Fairbairn, Sec. Lieut. H. Gould, Sec. Lieut. F. T. Russell, Sec. Lieut. H. T. Savage; March 4. Sec. Lieut. C. H. Badderley, Lieut. J. B. Bowes, Capt. E. G. Millar, Maj. W. H. Reid; March 5. Sec. Lieut. F. A. Grimwood, Sec. Lieut. C. J. F. Kynaston, Lieut. H. A. Milnes; March 6. Capt. E. St. J. G. Bevan, Lieut. (actg. Capt.) A. L. Johnson, Capt. A. W. T. Powell; March 7. Sec. Lieut. B. W. King; March 8. Lieut. J. Kirsop, Sec. Lieut. H. H. Peppercorn; March 9. Sec. Lieut. R. M. Brown, Lieut. F. P. Burns, Sec. Lieut. J. R. Charter, Lieut. R. T. Royse; March 11.

Capt. H. Farquharson (Gen. List, T.F.) relinquishes his commn. on account of ill-health; March 22.

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—H. Gray, G. Pitt (caused by wounds); March 22.

Sec. Lieut. J. N. Yuille relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 22.

Medical Branch

Lieut. J. A. Johnson to be Capt.; Jan. 15.

Maj. F. H. Stephens (Staff Surg., R.N.) relinquishes his commn. on ceasing to be employed; Jan. 31.

The following are transfd. to Unemployed List:—Lieut. G. D. M. Beaton; Feb. 7. Capt. D. H. Fraser, M.C.; Feb. 20.

Chaplains' Branch

Capt. J. D. Bolton is transfd. to Unemployed List; Feb. 27.

Memoranda

R. G. Millar is granted a temp. hon. commn. as Lieut.-Col.; Nov. 29, 1918 (substituted for notification in *Gazette* Jan. 14).

Lieut. J. Hill to be Hon. Capt.

The following Hon. Lieuts. relinquish their commns. on ceasing to be employed:—D. F. Young; Dec. 16, 1918. R. S. Leighton-Bailey; Dec. 31, 1918. C. C. Bissett; Jan. 15. H. Taylor; Jan. 16. G. A. S. Atkinson; Jan. 31. D. H. Irwin, C. E. King; Feb. 16.

The following are transfd. to Unemployed List, from (S.O.):—Capt. (actg. Maj.) R. H. Peto; Jan. 13. Lieut.-Col. C. M. Robertson; March 11. Lieut.-Col. (actg. Brig.-Genl.) B. C. Fellows, C.M.G.; March 19. Col. (actg. Brig.-Genl.) A. Huggin, C.M.G., D.S.O.; March 20.

London Gazette, March 25

The following temporary appointments are made at the Air Ministry:—Staff Officer, 1st Class.—(P.)—Maj. P. V. H. Mackenzie, and to be actg. Lieut.-Col. while so employed, from Nov. 1, 1918, to Jan. 31.

Staff Officer, 3rd Class.—(P.)—Capt. W. T. Hill, from Nov. 1, 1918, to Feb. 4.

The following temporary appointment is made:—

Staff Officer, 3rd Class.—(P.)—Capt. S. F. Ingram; Feb. 24. (T.)—The date of appointment of Lieut. A. Graham is July 10, 1918, and not as stated on page 518 of the *Gazette* of Jan. 10 (substituted for notification in *Gazette* March 14).

Flying Branch

Capt. H. D. Williams, M.C., to be actg. Maj. while employed as Maj. (A.); Oct. 1, 1918.

Lieut. L. H. McRobert to be Lieut. (A.) from (O.); July 26, 1918.

Sec. Lieut. (Hon. Lieut.) R. N. Halle to be Lieut.; Jan. 1.

The following are granted temp. commns. as Sec. Lieuts. (O.):—J. Montgomery (Lieut., R. Sc. Fus., T.F.), and to be hon. Lieut. (substituted for notification in *Gazette* Dec. 17, 1918). J. Topping (Temp. Sec. Lieut., R. Highrs.) (since missing, believed killed); Aug. 8, 1918. A. C. Taylor (Lieut.

C. Ont. R. (C.E.F.); Oct. 15, 1918, and to be hon. Lieut. R. H. Skinner (Sec. Lieut., R.F.A., S.R.); Nov. 16, 1918 (substituted for notification in *Gazette* of Dec. 10, 1918).

The following Sec. Lieuts. (late Gen. List, R.F.C.) are confirmed in their rank as Sec. Lieuts. (O.):—P. Kemp; April 25, 1918. W. E. Hall; Aug. 8, 1918.

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. C. B. Clark (Lieut., E. Ont. R.); Dec. 7, 1918. Lieut. A. C. Dean (Lieut., C. Ont. R.); Jan. 2. Lieut. J. D. Boyd (Lieut., B. Col. R.); Jan. 6. Sec. Lieut. (hon. Lieut.) R. T. Smith (Lieut., C. Ont. R.); Jan. 14. Lieut. H. E. Desborough (Lieut., Can. For. C.); Feb. 3. Lieut. F. C. Sawyer (Sec. Lieut., York. R.); Feb. 12. Lieut. R. V. Hamilton (Lieut., R. War. R.); Lieut. (Hon. Maj.) A. Clear (Maj., Manchester R.); Feb. 17. Sec. Lieut. (Hon. Lieut.) E. Cropper (Lieut., Alb. R.); Feb. 24. Lieut. N. F. McKela (Lieut., Alb. R.); Feb. 25. Lieut. (Hon. Capt.) G. B. Davies (Capt., Alb. R.); March 3. Lieut. S. T. Willis (Lieut., Northamp. R.); March 10. Lieut. E. Alder (Lieut., Manitoba R.); March 12. Lieut. (actg. Capt.) H. Axford, D.F.C. (Lieut., Manitoba R.); March 15.

The following are transfd. to Unemployed List:—Lieut. C. H. Sharp; Jan. 9. Lieut. G. Cornwall; Jan. 10. Lieut. (actg. Capt.) A. L. Harrow-Bunn, M.C.; Jan. 11. Sec. Lieut. G. E. S. McLeod; Jan. 12. Lieut. M. L. James; Jan. 20. Sec. Lieut. D. B. Thomson; Jan. 22. Sec. Lieut. R. L. Pallett; Jan. 23. Sec. Lieut. (Hon. Lieut.) J. S. Hunter (Lond. R., T.F.); Jan. 24. Sec. Lieut. E. J. E. Topham; Jan. 25. Sec. Lieut. A. Anderson, Sec. Lieut. H. R. Tyler; Jan. 26. Lieut. C. H. Jenkinson; Jan. 27. Sec. Lieut. E. F. D. Gregory, Sec. Lieut. A. J. Jones, Lieut. B. A. Simson; Jan. 28. Capt. (actg. Maj.) K. F. Baimain, Sec. Lieut. R. S. Farmer; Jan. 29. Lieut. (Hon. Capt.) R. H. Hawkins (S. Staffs. R.), Lieut. J. J. Lister, Lieut. A. B. Ollerenshaw, Sec. Lieut. D. Oxley; Jan. 31. Sec. Lieut. J. Clark, Lieut. S. H. B. Emms, Lieut. J. E. S. Jones (North R.), Sec. Lieut. R. Miller; Feb. 1. Lieut. J. Barker; Feb. 2. Lieut. J. Bennett, M.C., Lieut. H. K. Budgen, Lieut. F. Fowler; Feb. 3. Sec. Lieut. A. V. W. Church, Lieut. D. MacTavish (Cam. Highrs., T.F.), Lieut. J. McL. Pearson (Sco. Rif., T.F.); Feb. 4. Sec. Lieut. H. C. Charnley, Lieut. S. L. Hooper (B. West. Ind. R.), Lieut. R. V. Jameson; Feb. 5. Sec. Lieut. P. H. Fowler, Sec. Lieut. (Hon. Lieut.) W. B. Ives, Capt. E. L. Pralle, A.F.C. Sec. Lieut. J. G. Webster; Feb. 6. Lieut. G. S. Jones-Evans, D.F.C. Sec. Lieut. A. W. Glover, Lieut. A. H. Phillips, M.C. (Ox. and Bucks. L.I.); Feb. 7. Sec. Lieut. J. K. McGregor, Lieut. R. G. B. Nixon, Sec. Lieut. F. C. Randall, Sec. Lieut. J. L. Tait, Sec. Lieut. C. E. Trippe; Feb. 10. Sec. Lieut. C. E. Goddard, Lieut. (actg. Capt.) W. D. Patrick, Lieut. W. J. Pearson; Feb. 11. Lieut. T. Ridd, Lieut. H. L. Walter; Feb. 12. Sec. Lieut. G. H. Ellingham, Capt. G. W. Gathergood, Sec. Lieut. R. E. E. Hassell; Feb. 13. Lieut. M. E. Draper, Sec. Lieut. H. T. Ebbutt, Sec. Lieut. P. J. Gernsbacher, Lieut. N. R. Harden, D.F.C., Lieut. H. R. Moore, Lieut. H. G. Wildbore; Feb. 14. Lieut. E. C. Davies, M.C., Sec. Lieut. A. Macinnes, Lieut. W. A. Windsor; Feb. 15. Sec. Lieut. P. K. Whitehead; Feb. 16. Sec. Lieut. L. E. Jones; Feb. 17. Lieut. A. L. Davies, Lieut. M. Lewis; Feb. 18. Lieut. C. F. G. Doran, Lieut. G. S. French (Cam. R.), Lieut. W. B. Higgins, Sec. Lieut. J. W. Longland, Lieut. A. E. Watkins; Feb. 19. Sec. Lieut. N. T. Brown, Lieut. J. F. Downing, Sec. Lieut. A. W. Hardwick, Sec. Lieut. J. W. Hawley (York. L.I., T.F.), Sec. Lieut. L. H. Nesbitt, Sec. Lieut. C. R. Pickering; Feb. 20. Capt. A. Adamson, Lieut. D. R. Davies, Sec. Lieut. T. J. Egan (Mun. Fus.), Lieut. P. McAllen, Sec. Lieut. R. K. Mackenzie, Lieut. R. T. Williams; Feb. 21. Sec. Lieut. P. K. Homer, Sec. Lieut. R. E. Wimbush; Feb. 22. Sec. Lieut. G. E. Moore, M.C., Sec. Lieut. L. C. Welch; Feb. 23. Sec. Lieut. K. R. Goodacre, Capt. W. E. Grosset (High. Cyc. B., T.F.), Lieut. A. C. Pepper; Feb. 24. Sec. Lieut. D. Boe, Lieut. P. H. Clarke (R.G.A., S.R.), Lieut. H. W. Frith, Sec. Lieut. G. A. Harris, Sec. Lieut. C. G. Nettleton, Sec. Lieut. G. B. Pike; Feb. 25. Sec. Lieut. L. C. Baker, Sec. Lieut. C. V. Carr (W. Rid. R., T.F.), Sec. Lieut. W. R. T. Chamberlain, Sec. Lieut. H. Lancaster (N. Lanc. R., T.F.), Lieut. A. MacDonald, Sec. Lieut. J. G. B. McMillan, Sec. Lieut. F. W. Paget; Feb. 26. Lieut. H. C. Fulcher (R.E., T.F.), Lieut. H. B. Hartland, Sec. Lieut. A. Tytler, Lieut. A. C. Tremellen; Feb. 27. Sec. Lieut. H. S. Basford, Sec. Lieut. F. E. Dawe, Lieut. W. Y. Gothorp, Lieut. B. H. McCormack, Sec. Lieut. (Hon. Lieut.) D. J. C. McCowan (Cam.), Sec. Lieut. E. S. Sage; Feb. 28. Lieut. (actg. Capt.) P. Grosset (High. Cyc. B.), Lieut. D. B. Hartle, Sec. Lieut. A. F. Quittenden, Lieut. A. F. Stokes, Capt. R. R. Thornley, D.S.C.; March 1. Sec. Lieut. R. F. B. Caukwell, Sec. Lieut. E. L. Goulder, Lieut. R. Lang, Lieut. S. B. Reece, Lieut. C. G. Shaurer (Lond. R., T.F.); March 2. Sec. Lieut. G. R. Hodgkinson, Sec. Lieut. J. Lumsden; March 3. Sec. Lieut. J. Arnold (L'pool R.), Lieut. (actg. Capt.) W. R. Balden, Sec. Lieut. R. Bardsley, Sec. Lieut. G. Highton, Lieut. R. J. Paterson (Hants. R.); March 4. Capt. A. E. Davis (Suff. R.), Lieut. A. G. Fleming (Sco. Rif.), Lieut. A. I. Orr-Ewing (Berks. Yeo.), Maj. F. W. Smith (R.A., T.F.); March 5. Maj. L. S. Bradner, Sec. Lieut. E. P. Clacey, Lieut. A. H. Crump, Sec. Lieut. A. W. Gain, Lieut. A. T. W. Goldsmith, Lieut. F. W. Goodman, Sec. Lieut. G. W. Goodwin, Sec. Lieut. R. C. Hardy, Sec. Lieut. W. E. Hargreaves (R. Lancs. R.), Sec. Lieut. F. W. Hicks (Lond. R., T.F.), Sec. Lieut. G. D. Lane, Sec. Lieut. C. Wise; March 6. Sec. Lieut. H. Bagshawe, Sec. Lieut. R. C. Emmett, Sec. Lieut. E. C. Farmer, Lieut. (actg. Capt.) F. W. Gillett, D.F.C., Sec. Lieut. W. A. L. D. Glover, Sec. Lieut. W. Hewitt, Lieut. W. F. Hendershot, Sec. Lieut. E. C. Hill-Clark, Lieut. E. W. Pritchard, Lieut. W. V. Radford, Sec. Lieut. H. W. Wallace, Sec. Lieut. H. A. Williams; March 7. Sec. Lieut. J. Baillie, Lieut. J. N. Dugdale, Lieut. R. J. Eccles, Sec. Lieut. W. H. Gann, Sec. Lieut. H. E. Grove, Sec. Lieut. A. W. Grant, Sec. Lieut. J. Gallacher, Sec. Lieut. (Hon. Lieut.) W. D. Hamilton, Lieut. (actg. Capt.) R. McLaughlin, D.F.C., Sec. Lieut. (Hon. Lieut.) W. A. MacMillan (R.G.A., T.F.), Lieut. T. T. Taylor, Sec. Lieut. F. N. A. Vincent; March 8. Sec. Lieut. V. B. Bedell, Sec. Lieut. E. R. Bull, Capt. L. N. Glaisby, D.S.C., Lieut. H. Greene, Lieut. (actg. Capt.) C. H. R. Lagesse, D.F.C., Sec. Lieut. P. W. Lynch-Blosse, Lieut. V. I. Olliver; March 9. Lieut. S. A. Gomez (Dor. R.); March 10. Sec. Lieut. G. A. Allenby, Lieut. P. Blairman, Lieut. E. C. Cockwin, Sec. Lieut. R. J. Evans, Sec. Lieut. C. W. Frasier, Capt. D. Gill, Sec. Lieut. W. Learmouth, Sec. Lieut. H. M. Kettener, Lieut. H. Lingard, Sec. Lieut. (Hon. Capt.) H. A. Porter (R.G.A., T.F.), Lieut. (actg. Capt.) E. J. Smethan-Jones, Capt. L. R. Warren, Lieut. T. J. P. York; March 11. Lieut. N. J. Brebner, Lieut. L. Chivers, A.F.C., Sec. Lieut. D. A. Conney, Lieut. L. G. Barnett, Lieut. T. T. Ginn, Sec. Lieut. J. E. Hammond, Lieut. J. E. Harwood, Lieut. G. Hodgson, Sec. Lieut. L. G. Lucas, Sec. Lieut. S. L. McKillen, Lieut. M. P. McLeod, Sec. Lieut. A. C. J. Payne, M.M., Sec. Lieut. S. Perkins, Lieut. C. P. Ranger, Lieut. S. T. H. Roberts, Capt. N. E. Stirling, Sec. Lieut. F. A. Taylor, Lieut. W. H. Valentine, Capt. A. T. Whealy; March 12. Capt. L. L. King, D.F.C., Lieut. F. R. Mangham, Sec. Lieut. J. B. Nelson, Sec. Lieut. W. S. Wann, Sec. Lieut. J. H. C. Wake; March 13. Sec. Lieut. (Hon. Capt.) C. E. Bowden (D.C.L.I., T.F.), Lieut. G. J. Gumyon, Sec. Lieut.

W. N. Scott, Sec. Lieut. C. P. Sparkes, Lieut. H. A. Vineberg, Sec. Lieut. J. W. Watkins, Capt. J. S. Webb, Sec. Lieut. S. C. Worrall; March 14. Capt. D. C. Bell, M.C. (Midx. R., T.F.), Sec. Lieut. W. C. Benson, Sec. Lieut. F. S. Gordon, Lieut. D. W. MacIntosh (Cam. Highrs.), Lieut. G. H. Palmer, Sec. Lieut. J. S. K. Warren; March 15. Capt. E. P. Hicks, Lieut. D. F. Woodford; March 16. Lieut. J. T. C. Gray; March 18.

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—H. W. Arnott (contracted on active service), L. E. Francis; March 26.

Lieut. C. J. Wilsdon relinquishes his commn. on account of ill-health caused by wounds; March 26.

The following Sec. Lieuts. relinquish their commns. on account of ill-health and are permitted to retain their rank:—H. Bridger, H. B. Hewat (contracted on active service), B. W. Weight; March 26.

Sec. Lieut. M. P. La Fleur relinquishes his commn. on account of ill-health; March 26.

Sec. Lieut. A. J. Bonella relinquishes his commn., being physically unsuited for the duties of Pilot or Observer; March 20 (substituted for notification in *Gazette* Nov. 5, 1918).

The Christian names of Sec. Lieut. George Egerton Stuart McLeod are as now described, and not as stated in the *Gazette* of June 14, 1918.

The surname of Sec. Lieut. H. Oates is as now described, and not Gates, as stated in *Gazette* of Nov. 22, 1918.

The surname of Lieut. N. C. Ashton is as now described, and not as stated in the *Gazette* of Dec. 31, 1918.

The surname of Sec. Lieut. A. E. Browne is as now described, and not as stated in the *Gazette* of Jan. 14.

The initials of Lieut. (actg. Capt.) L. C. Pockney are as now described, and not as stated in the *Gazette* of Feb. 28.

The notification in the *Gazette* of Feb. 14 concerning Lieut. R. W. Jackson is cancelled.

Administrative Branch

Capt. H. O'N. de H. Segrave to be Capt., from (S.O.); Dec. 13, 1918. Lieuts. to be actg. Capts. whilst employed as Capts.:—A. B. Monk; Dec. 30, 1918. R. C. Vaughan, M.C.; March 6.

Lieuts. (A.) to be Lieuts.:—J. K. Line; Nov. 18, 1918. C. G. Evans; Dec. 12, 1918. L. Wigley; Dec. 20, 1918. A. A. Powell; Jan. 6. M. S. C. Gordon; Jan. 7. W. H. Gibson; Jan. 17. O. D. Hay; Jan. 25. C. Parkinson; Jan. 27. (Hon. Capt.) J. E. A. O'Dwyer; Jan. 30. F. C. Rider; Feb. 3. O. Pearson; Feb. 10. E. T. McC. Routledge; Feb. 11. (Actg. Capt.) J. B. Tait; Feb. 19, and relinquishes the actg. rank of Capt. E. F. Wright; March 6.

Lieuts. (K.B.) to be Lieuts.:—A. G. Bullock; Oct. 25, 1918. E. F. Jones; Nov. 29, 1918. G. T. Dunstan; Dec. 11, 1918. (Hon. Capt.) B. B. Bishop; Jan. 24. (Hon. Capt.) N. R. Mossop; Feb. 6. B. Thomas; Feb. 7.

Lieuts. (O.) to be Lieuts.:—R. C. Jones; Nov. 25, 1918. W. D. Jeans; Dec. 2, 1918. M. V. Stewart; Dec. 6, 1918. E. C. Batchelor, M.C.; Dec. 18, 1918. R. W. Peat; Dec. 30, 1918. S. F. Thompson; Jan. 7. A. S. Hibbs; Jan. 30.

Lieut. T. S. Cowperthwaite to be Lieut., from A.P. (T.); March 18.

Sec. Lieut. A. E. P. Smith to be Lieut.; April 2, 1918.

Sec. Lieuts. to be Sec. Lieuts., from (A.):—E. N. Allott; Dec. 9, 1918. A. Brufton; Dec. 18, 1918. F. D. Butcher; Dec. 30, 1918. T. K. Bentley; Jan. 3. F. F. Anslow; Jan. 10. H. P. Bell; Jan. 15. (Hon. Lieut.) L. A. W. Knight; Jan. 16, and to be Hon. Lieut. A. L. Bloom; Feb. 7. T. Fraser; (Hon. Capt.) A. P. Thompson, and to be Hon. Capt.; Feb. 10. A. A. S. Milne; Feb. 17. E. J. Lanchbury; Feb. 19. H. Townley; Feb. 22.

Sec. Lieuts. to be Sec. Lieuts., from (A. and S.):—(Hon. Lieut.) R. J. V. Pulvertaft; Dec. 31, 1918, and to be Hon. Lieut. G. J. Dickins; Jan. 8. H. R. Cooke; Jan. 28. J. G. Dugdale; Feb. 14.

Sec. Lieuts. to be Sec. Lieuts., from (K.B.):—J. H. Gray; Jan. 3. F. M. Hawthorn, H. W. Goss; Jan. 15. A. E. Hopkins; Jan. 31.

Sec. Lieuts. to be Sec. Lieuts., from (O.):—W. H. Gardner; Nov. 21, 1918. F. F. Crump; Dec. 3, 1918. F. Warham; Dec. 6, 1918. W. G. Brown; Dec. 12, 1918. Hon. Lieut. W. T. Mitchell; Jan. 12, and to be Hon. Lieut. F. Heath; Jan. 18. T. Newey, H. S. Mullen; Jan. 21. (Hon. Lieut.) W. L. Kendrick, and to be Hon. Lieut., S. Dennis; Jan. 27. C. W. Newstead; Jan. 30. A. Johnson; Jan. 31. N. Butt; Feb. 3. L. J. Skinner; Feb. 4. (Hon. Capt.) M. C. Bulleel; Feb. 7, and to be Hon. Capt. H. P. Jeppe; Feb. 10. E. C. Hayes; Feb. 11. A. B. Bennett; Feb. 12. G. C. Russell; Feb. 15. L. F. Rowsell, W. Cowden, J. N. T. Spence; Feb. 17. P. J. Holmes; Feb. 18.

Sec. Lieut. A. J. Somers to be Sec. Lieut., from (T.); Feb. 24.

The following Sec. Lieuts. (la.e Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts.:—J. Earle-Wilson; April 1, 1918. H. Kaye; Aug. 31, 1918.

The following relinquish their commns. on ceasing to be employed:—Capt. E. V. Noel (Capt., Lond. R.); Feb. 13. Sec. Lieut. J. Miller (Temp. Sec. Lieut., D.L.I.); Feb. 21.

The following are transd. to Unemployed List:—Sec. Lieut. E. J. Sayer; Jan. 9. Sec. Lieut. A. V. Branson; Feb. 4. Lieut. (actg. Capt.) G. S. D. M. Pape; Feb. 5. Capt. A. B. Knapp-Fisher (Lond. R.); Sec. Lieut. J. G. Paterson; Feb. 7. Sec. Lieut. A. Turnbull; Feb. 11. Sec. Lieut. J. Douglas, Sec. Lieut. W. Druce, Sec. Lieut. C. H. Huntly; Feb. 12. Lieut. F. R. Haggie; Feb. 21. Sec. Lieut. A. Henderson; Feb. 22. Sec. Lieut. L. Greatbach; Feb. 25. Sec. Lieut. R. F. Houston; Feb. 26. Lieut. A. W. Robinson (E. Surr. R.); Feb. 27. Lieut. H. N. Giles, Sec. Lieut. F. L. Howard, Capt. A. P. A. Larking; Feb. 28. Sec. Lieut. H. B. Elbourne, Maj. W. C. Grant, Lieut. H. W. Liversidge; Mar. 1. Sec. Lieut. F. H. Blaxhill, Sec. Lieut. F. A. Dinsdale, Sec. Lieut. D. J. Evans, Lieut. C. Green, Sec. Lieut. C. G. Smith; March 2. Lieut. (Hon. Capt.) (actg. Capt.) S. C. F. Bacon, Lieut. K. L. Bulkley (Hants. R., T.F.), Capt. S. J. Smith; March 2. Lieut. C. Guthrie, Lieut. G. T. Learmond (Cav.); March 5. Sec. Lieut. P. F. Ellison, Lieut. (actg. Capt.) P. C. Hollingsworth, M.C., Lieut. A. J. Lucas, Sec. Lieut. H. M. Lonsdale; March 6. Sec. Lieut. E. H. Ades, Sec. Lieut. P. C. Holloway; March 7. Capt. W. W. Lendon (Lond. R., T.F.); March 8. Sec. Lieut. R. P. H. Brown, Sec. Lieut. M. V. Benham, Sec. Lieut. C. R. Jones, Sec. Lieut. A. H. Tilbury; March 11. Lieut. M. Besso (Manch. R., T.F.), Sec. Lieut. N. C. Raffin, Lieut. R. S. Rudd; March 14. Lieut. W. G. Hurrell, D.F.C., Lieut. J. B. Low (I.L.L.); March 16.

Capt. J. F. Kerr relinquishes his commn. on account of ill-health caused by wounds, and is permitted to retain his rank; March 26.

Capt. H. V. Rose is removed the Service, His Majesty having no further use of his services as an officer; March 26.

The notification in *Gazette* Jan. 24 concerning Sec. Lieut. S. Stevens is cancelled.

The notification in *Gazette* Feb. 4 concerning Lieut. L. T. Lewis is cancelled.

The notification in *Gazette* Feb. 14 concerning Lieut. (Hon. Capt.) S. Snow, M.C., is cancelled.

Technical Branch

Lieut. H. R. Stewart to be Lieut. (Grade A), from (O.); May 29, 1918. (Substituted for notification in *Gazette* Feb. 21.)

Lieut. E. T. Molyneux to be Lieut. (Grade B), from (A.); Jan. 14.

R. P. Gosnell (Capt., H.A.C.) is granted a temp. commn. as Lieut. (Grade A), seniority April 1, 1918, and to be Hon. Capt.; Aug. 5, 1918.

Sec. Lieuts. to be Lieuts., without pay and allowances of that rank:—H. E. Tabor; March 1. C. J. Polden; March 8.

Sec. Lieut. P. R. Williams to be Sec. Lieut. (Grade A), from (Grade B); Feb. 21.

Sec. Lieut. H. F. Hickey to be Sec. Lieut. (Grade B), from (A.D.); March 10.

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. A. Campbell (Lieut., Suss. R., T.F.); Nov. 28, 1918. Lieut. (actg. Capt.) H. W. Brooks, Lieut., York and Lanc. R.; Feb. 14.

The following are transd. to Unemployed List:—Sec. Lieut. (actg. Lieut.) E. W. M. Tomlinson; Jan. 17. Sec. Lieut. (Hon. Lieut.) (actg. Lieut.) E. G. Seth-Smith (E. Surr. R.); Feb. 2. Lieut. A. Dobson; Feb. 4. Lieut. P. G. Edmonds, Capt. J. S. Reid; Feb. 8. Sec. Lieut. (Hon. Lieut.) E. R. Parsons (R.G.A., T.F.); Feb. 14. Lieut. A. Henderson (R. Sco., T.F.), Lieut. H. Smith; Feb. 19. Sec. Lieut. E. H. Harrison; Feb. 20. Sec. Lieut. (actg. Capt.) H. E. Haddon; Feb. 21. Sec. Lieut. (actg. Lieut.) H. F. Wilkins, Lieut. B. F. Wood; Feb. 23. Lieut. C. L. Loyd (E. Kent. R., T.F.), Sec. Lieut. H. S. Wood; Feb. 25. Capt. L. J. Jones (Lond. R., T.F.), Sec. Lieut. F. Reynolds; Feb. 26. Sec. Lieut. (actg. Lieut.) R. J. Tallyn; Feb. 27. Sec. Lieut. S. Calam; Mar. 1. Sec. Lieut. A. Haigh, Sec. Lieut. H. Stuart; March 2. Sec. Lieut. R. M. Balston; March 3. Sec. Lieut. E. T. Fountain, Lieut. (actg. Capt.) H. E. Hotchin, Lieut. E. Tanner (Manch. R.); March 4. Lieut.-Col. T. B. Barrington, Sec. Lieut. W. W. Fyfe, Lieut. T. B. Glover, Lieut. H. W. Wolverson; March 5. Lieut. C. M. Benjamin, Sec. Lieut. J. A. Edge, Sec. Lieut. W. H. P. Parker; March 7. Sec. Lieut. A. J. Kurn, Sec. Lieut. R. U. Nash-Taylor, Capt. W. F. Prentice, M.B.E., Lieut. P. S. Taylor, Sec. Lieut. J. Wall; March 8. Sec. Lieut. J. A. Cundy, Lieut. J. H. Loveridge, Sec. Lieut. W. L. Pike, M.C.; March 11. Sec. Lieut. E. G. P. Hopkins, Sec. Lieut. J. A. Moore, Capt. T. O. C. Pease, Maj. J. O. Ruscoe; March 12. Sec. Lieut. C. G. Massey-Dawson; March 13. Sec. Lieut. (Hon. Lieut.) R. D. Wakeham; March 14. Sec. Lieut. R. I. L. Croucher; March 15. Capt. C. W. Alexander; March 17. Lieut.-Col. S. E. Smith, O.B.E. (Glouc. R.); March 18.

Lieut.-Col. H. B. Nutting relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 26. Lieut. T. J. Stannage relinquishes his commn. on account of ill-health, and is permitted to retain his rank; March 26.

Sec. Lieut. J. P. Haworth relinquishes his commn. on account of ill-health, and is permitted to retain his rank; March 26.

The Christian names of Lieut. (actg. Capt.) Joseph Arthur Atkinson are now as described, and not John Abbott, as stated in *Gazette* of Feb. 11.

The initials of Sec. Lieut. C. T. Parker are as now described, and not as stated in *Gazette* of Feb. 25.

Medical Branch

G. Dreyer (Temp. Hon. Lieut.-Col., R.A.M.C.) is granted a temp. commn. as Hon. Lieut.-Col.; Oct. 2, 1918, with seniority from April 1, 1918.

The following are transd. to Unemployed List:—Lieut. P. M. Roberts; Feb. 13. Capt. A. MacLennan (R.A.M.C., T.F.); Feb. 21. Lieut. L. C. W. Balls; Feb. 23. Lieut. J. J. Savage; March 15.

The notification in *Gazette* of Feb. 14 concerning Capt. L. G. Davies is cancelled.

Physical Training Branch

Lieut. (actg. Capt.) L. E. Cording, M.C., retains the actg. rank of Capt. whilst employed as Asst. Superintendent of Gymnasia, from (Ad.); Dec. 3, 1918.

Memoranda

F. H. Bramwell is granted a temp. hon. commn. as Maj.; April 1, 1918. Dattabraya Laxuman Patwardhan is granted a temp. hon. commn. as Sec. Lieut.; March 15.

The following Hon. Lieuts. relinquish their commns. on ceasing to be employed:—Actg. Hon. Capt. F. Gay, C. J. Grierson; Feb. 16.

Hon. Capt. (actg. Hon. Maj.) F. B. Halford relinquishes his commn. on ceasing to be employed; Feb. 24.

The following are transd. to Unemployed List, from (S.O.):—Capt. N. F. W. Rokeby; Jan. 21. Lieut. H. S. Rogers; Feb. 2. Lieut. (actg. Capt.) R. P. Lamb; Feb. 12. Lieut. H. S. Morris (C. Gds., S.R.); Feb. 22. Capt. (actg. Maj.) F. C. Buck, Lieut. H. W. Hern; March 1. Capt. C. G. Jones; March 4. Sec. Lieut. (actg. Lieut.) R. C. J. Hervey; March 5. Capt. W. A. C. Docketts; March 7. Capt. H. M. Ryland; March 11. Lieut. F. R. Richardson; March 15. Lieut. (actg. Capt.) P. J. Cayley; March 17.

Capt. E. Page (Lieut., Midx. R.) relinquishes his commn. on account of ill-health, and is permitted to retain his rank; March 26.

London Gazette, February 28

The following temporary appointments are made:—Staff Officers, 3rd Class.—And to be actg. Capts. whilst so employed:—(P.).—Lieut. S. F. Culver; Jan. 20. (T.).—Lieut. B. D. Bellamy; March 18.

Flying Branch

Maj. J. S. Scott, M.C., A.F.C., to be actg. Lieut.-Col. whilst employed as Lieut.-Col. (A.); Sept. 1, 1918.

Capt. H. A. Wesendarp to be Maj.; April 1, 1918, and to take prec. next below Maj. E. L. Millar (substituted for notification in *Gazette*, Feb. 14).

Capt. L. R. Andrews to be actg. Maj. whilst employed as Maj. (A.); Nov. 1, 1918.

Capt. to be graded for purposes of pay as Capts., whilst employed as Capt. (A.):—F. J. Vincent; April 1, 1918. S. T. Freeman; Aug. 28, 1918.

Capt. H. D. Hyde to be graded for purposes of pay as Capt., whilst employed as Capt. (K.B.); Aug. 28, 1918.

Lieuts. to be actg. Capts. whilst employed as Capts. (A.):—E. L. Lister; May 1, 1918. H. Wickert, D.F.C.; Sept. 1, 1918. K. G. Withers; Oct. 1, 1918. (Hon. Capt.) A. R. Fairbairn (C. Ont. R.); Oct. 21, 1918.

Lieuts. to be actg. Capts. whilst employed as Capts. (A. and S.):—C. Chrimes, D. F. Murray, D.F.C.; Aug. 1, 1918. R. St. H. Clarke; Aug. 28, 1918.

Lieuts. to be actg. Capts. whilst employed as Capts. (K.B.):—A. M. Ross; July 13, 1918. (Hon. Capt.) J. P. Walters; Aug. 28, 1918.

Sec. Lieut. J. Maclelland to be actg. Capt. whilst employed as Capt. (K.B.); July 13, 1918.

Lieut. O. R. Gayford, D.F.C., to be actg. Capt. whilst employed as Capt. (O.); April 1, 1918.

Lieut. H. E. Hazlehurst to be Lieut. (A.) from (T.); Sept. 23, 1918 (substituted for notification in *Gazette* Oct. 4, 1918).

Lieut. T. W. Kirkpatrick to be Lieut. (O.), from (Ad.); Sept. 5, 1918.

Flight Cadet 302208 G. A. Hooton is granted a temp. commn. as Sec. Lieut. (Obs. Officer); Oct. 19, 1918.

Lieut. D. B. Cumming relinquishes his commn. on reversion I.A.R.O.; Nov. 28, 1918 (substituted for notification in *Gazette* Dec. 31, 1918).

The following relinquish their commns. on ceasing to be employed:—Lieut. J. A. Anderson (Lieut., B. Columb. R.); Feb. 28. Lieut. D. L. Burgess, M.C. (Lieut., Sask. R.), Lieut. (actg. Capt.) C. E. B. Corbould (Capt., W. Ont. R.), Lieut. (Hon. Capt.) G. B. Davies (Capt., Alb. R.), Lieut. (actg. Capt.) R. B. Sutherland (Capt., Can. Engrs.); March 3. Lieut.

(Hon. Capt.) H. A. Driscoll (Capt., Manitoba R.); March 5. Lieut. H. S. Whiteside (Capt., W. Ont. R.): March 20.

The following are transfd. to Unemployed List:—Sec. Lieut. W. H. Abraham; Jan. 2. Lieut. J. Adam; Jan. 8. Sec. Lieut. R. W. Jones; Jan. 9. Sec. Lieut. (Hon. Lieut.) R. W. Jackson; Jan. 11. Sec. Lieut. T. H. Walker; Jan. 12. Lieut. H. G. Frost; Jan. 15. Sec. Lieut. S. W. Jackson; Jan. 16. Sec. Lieut. A. A. Campbell, Lieut. H. G. Mackintosh, Sec. Lieut. H. H. Jackson, Lieut. T. R. Scott, D.F.C.; Jan. 17. Lieut. J. W. McKenzie, Sec. Lieut. (Hon. Lieut.) T. W. Moore, Sec. Lieut. D. R. Morgan; Jan. 18. Sec. Lieut. L. W. Marchant; Jan. 20. Sec. Lieut. A. W. Cornforth, Lieut. S. V. Cowell, Sec. Lieut. F. C. Morgan; Jan. 21. Lieut. A. T. McKay, Lieut. R. G. Sillars; Jan. 22. Sec. Lieut. A. Arnott, Sec. Lieut. J. McAuley; Jan. 23. Sec. Lieut. F. J. Cotsell, Lieut. (actg. Capt.) E. H. Marshall, Lieut. I. C. Sanderson, Sec. Lieut. A. C. Whitney; Jan. 24. Lieut. W. L. Davidson, Capt. A. M. Harding, Sec. Lieut. W. Lowe, Sec. Lieut. (Hon. Lieut.) G. M. McGorrey, Sec. Lieut. C. W. Verity; Jan. 26. Capt. G. R. Marshall, Sec. Lieut. R. Mayson, Sec. Lieut. A. B. Meller, Sec. Lieut. R. J. Siddall; Jan. 28. Lieut. (actg. Capt.) V. Beecroft, Lieut. A. F. Kemp, Sec. Lieut. A. A. Mound, Lieut. J. E. G. Mosby, D.S.O.; Sec. Lieut. P. E. Richardson, Sec. Lieut. J. C. Tyler; Jan. 29. Lieut. A. Blomfield, Lieut. R. Carlow; Jan. 30. Maj. (actg. Lieut.-Col.) H. L. Cooper, Lieut. L. A. Jessop, D.F.C., Sec. Lieut. F. T. Milton, Lieut. G. F. Steel, Lieut. F. R. Watkins, Lieut. C. M. Watterson; Jan. 31. Lieut. T. Aitken, Lieut. E. Bell, Lieut. L. Childs, Sec. Lieut. D. Davies, Sec. Lieut. A. T. Dunlop, Capt. C. M. Down (Herts. R.), Lieut. S. C. Jackson, Sec. Lieut. J. McColl, Sec. Lieut. E. A. Simpson, D.F.C., Lieut. I. B. Wallas; Feb. 1. Lieut. D. Alexander, Sec. Lieut. J. Jackson, Lieut. F. J. Kydd, Sec. Lieut. S. A. Marden, Lieut. W. C. Watson, Sec. Lieut. L. F. J. Wall, Sec. Lieut. J. Y. Watson; Feb. 2.

Sec. Lieut. S. S. Church, Sec. Lieut. T. H. May; Feb. 3. Sec. Lieut. H. J. Collar, Lieut.-Col. A. S. W. Dore, D.S.O., Lieut. A. C. Hendry, M.C., Lieut. T. R. Hatton, Lieut. E. A. R. Hills, Sec. Lieut. F. Jones, Sec. Lieut. G. D. Knighton, Sec. Lieut. M. A. McKenzie, M.C. (R. Scots. Fus.), Lieut. (actg. Capt.) D. V. D. Marshall, Sec. Lieut. G. B. Mason, Lieut. A. T. Miller, Sec. Lieut. T. C. A. Meyer, Lieut. (actg. Capt.) E. Swale, D.F.C.; Feb. 4. Sec. Lieut. W. V. Adams, Lieut. D. M. Bisset, Lieut. H. K. Cassels, Lieut. W. A. Campbell, Sec. Lieut. W. T. S. Cairns, Lieut. W. G. Hasler, Sec. Lieut. C. T. G. R. Miller, Sec. Lieut. W. Stephenson, Lieut. P. E. Tyson, Sec. Lieut. H. O. Warren; Feb. 5. Lieut. A. W. Archer, Lieut. W. R. C. Birney, Lieut. R. E. Frampton, Lieut. H. Garnett, Lieut. S. W. Graham, Lieut. (actg. Capt.) H. G. Hegarty, M.C., Sec. Lieut. A. J. Midgley, Sec. Lieut. H. G. Macklin, Lieut. C. H. Smith, Sec. Lieut. R. Smith, Lieut. B. T. Ward, Sec. Lieut. J. C. Watt; Feb. 6. Sec. Lieut. T. K. Bentley, Sec. Lieut. F. Christelow, Sec. Lieut. G. D. Coates, Lieut. T. Marburg, Lieut. W. G. D. H. Nicol, Sec. Lieut. J. Stephenson; Feb. 7. Capt. (actg. Maj.) H. H. Balfour, M.C., Lieut. W. T. V. Harmer, Sec. Lieut. W. F. Marr, Sec. Lieut. A. R. Magos, Sec. Lieut. J. Mitchinson, Sec. Lieut. J. Sellers; Feb. 8. Lieut. H. B. Challen, Lieut. A. J. Forbes, Sec. Lieut. A. W. Johnston, Sec. Lieut. A. G. Marks, Lieut. A. E. Smith, D.F.C.; Feb. 9. Sec. Lieut. E. Anderson, Sec. Lieut. E. C. Collymore, Sec. Lieut. B. Hearne, Sec. Lieut. S. W. Jackson, Sec. Lieut. T. J. Warwick; Feb. 10. Lieut. C. W. Adsin, Lieut. G. F. C. Caswell, Sec. Lieut. H. F. Carpenter, Lieut. N. N. Cooper, Sec. Lieut. T. Hargreaves, Lieut. R. F. S. Johnson, Lieut. G. H. Mackrow, Lieut. (actg. Capt.) K. B. Montgomery, M.C., Lieut. A. E. Turton, Sec. Lieut. (Hon. Lieut.) J. Wilson (Ayr. Yeo.); Feb. 11. Sec. Lieut. (Hon. Lieut.) J. C. Alderton, Sec. Lieut. C. M. Allan, Lieut. J. C. Bell, Capt. C. Courtneidge, Sec. Lieut. W. Coomb, Sec. Lieut. W. England, Sec. Lieut. P. E. L. Foot, Sec. Lieut. (Hon. Lieut.) G. M. Knox, Lieut. B. S. Lister, Lieut. A. D. Martin, Sec. Lieut. V. Ross (R. Engrs.), Sec. Lieut. L. H. Walker, Sec. Lieut. C. D. Thornton, Sec. Lieut. E. N. Ward, Sec. Lieut. W. L. Walker, Lieut. S. Walther; Feb. 12. Lieut. P. R. Cawdell (Capt., R.A.S.C., T.F.), Sec. Lieut. H. Chester-Master, Sec. Lieut. S. G. Jary, Lieut. W. K. Macfarlane, Lieut. N. J. Watson, Lieut. A. P. Warren; Feb. 13. Lieut. C. G. Baker, Sec. Lieut. W. F. Conway, Sec. Lieut. A. Fletcher, Sec. Lieut. P. G. Kew, Sec. Lieut. W. R. Midgeley, Lieut. R. D. Warren; Feb. 14. Lieut. A. F. Bird, Sec. Lieut. L. Beavis, Capt. H. Barker, Capt. J. A. Barton, Lieut. F. C. Coops, Sec. Lieut. (Hon. Lieut.) H. S. Collett, Sec. Lieut. J. M. Dunlop, Lieut. H. J. Goulding, Lieut. F. Jeffreys, Sec. Lieut. D. H. Keevil, Capt. A. Lindley, Sec. Lieut. R. H. Milner; Feb. 15.

Lieut. L. C. Band, Sec. Lieut. W. O. G. Fenton, Sec. Lieut. F. J. Fawcett, Lieut. A. E. N. Jansen, Capt. E. B. MacManus, Lieut. J. A. Scrivener; Feb. 16. Lieut. B. T. Anderson, Sec. Lieut. C. F. Ambler, D.F.C., Lieut. O. H. Chilton, Sec. Lieut. J. R. Colquhoun, Sec. Lieut. (Hon. Lieut.) R. H. Conran, Sec. Lieut. E. I. Dallinger, Maj. R. W. Gow, D.S.O., Capt. W. D. Jackson, D.F.C., Sec. Lieut. (Hon. Lieut.) M. R. H. Kane, Sec. Lieut. H. J. Keddy, Sec. Lieut. P. C. S. McCrea, Sec. Lieut. H. C. Mann, Lieut. P. K. Masson, Sec. Lieut. J. M. Scott; Feb. 18. Sec. Lieut. R. H. Armstrong, Lieut. B. D. Bate, M.C., Lieut. F. G. Baker, Sec. Lieut. S. A. Barnes, Sec. Lieut. R. M. Campbell, Sec. Lieut. W. F. Caldwell, Capt. W. H. E. Campbell, A.F.C., Sec. Lieut. J. I. Elliott, Lieut. J. J. Fenwick, Lieut. R. S. Hitchcock, Lieut. W. R. Heaton, Lieut. (actg. Capt.) C. C. Hayward, Sec. Lieut. J. H. Jameson, Lieut. A. O. Lacy, Sec. Lieut. H. S. Mantle, Lieut. A. McL. Miller, Lieut. H. P. Mallett, Sec. Lieut. J. S. Stringer, Lieut. W. B. Styles, Sec. Lieut. E. Singleton; Feb. 19. Sec. Lieut. G. Ballance, Lieut. J. L. Davies, Lieut. A. P. Fitzgerald, Lieut. J. A. A. Ferguson, Lieut. H. A. Hallam, Lieut. (actg. Capt.) E. D. C. Hearne, Lieut. L. B. Helder, Lieut. N. McLeod, Sec. Lieut. (Hon. Lieut.) W. S. B. Walker, Sec. Lieut. E. S. Rippon; Feb. 20. Lieut. C. A. Bryant, Lieut. O. G. S. Crawford, Sec. Lieut. S. Harvey, Sec. Lieut. J. W. London, Sec. Lieut. G. G. Marsland, Lieut. W. H. Matthews; Feb. 21. Capt. G. W. D. Allen, M.C., Lieut. R. D. Coath, Sec. Lieut. W. S. Chrystal, Lieut. H. Harris, Lieut. H. J. Jewell, Sec. Lieut. J. T. McDougall, Sec. Lieut. G. E. Mann, Lieut. F. L. Roper, Lieut. H. W. Russell, D.F.C., Sec. Lieut. F. Smith; Feb. 22. Lieut. W. J. Attwood, Lieut. J. S. Andrews, Sec. Lieut. A. J. Baxter, Lieut. C. W. Beatty, Sec. Lieut. H. P. Bennett, Lieut. F. A. Coutts, Sec. Lieut. E. R. Corneil, Sec. Lieut. G. T. Campbell, Lieut. P. T. Harris, Lieut. W. P. Hawgood, Lieut. D. Kennedy, Lieut. H. B. Kerruish, Sec. Lieut. F. L. Kay, Sec. Lieut. N. M. McDougall, Sec. Lieut. R. O. Reynolds, Lieut. J. Ross, Sec. Lieut. H. Rawsthorne, Lieut. A. R. Talbot, Lieut. H. L. Whiteside, Sec. Lieut. G. Williams; Feb. 23.

Lieut. A. L. Fleming, Maj. A. Gray, M.C. (M.G.C.), Lieut. C. D. Jennery, Lieut. P. Q. Reiss; Feb. 24. Sec. Lieut. C. Alexander, Sec. Lieut. L. S. Ford, Sec. Lieut. E. P. Glanville, Lieut. D. McC. Martin, Sec. Lieut. (Hon. Lieut.) A. J. Rose, Lieut. R. D. Walker; Feb. 25. Lieut. F. J. Ashkam, Lieut. J. Baird, Lieut. A. H. Caley, Sec. Lieut. A. W. Chamberlain, Lieut. H. J. W. Collins, Sec. Lieut. J. H. L. Cowin, Lieut. (actg. Capt.) H. C. Haydock, Lieut. M. N. Hancock, Lieut. A. Jackson, Sec. Lieut. W. F. Jones, Sec. Lieut. R. McKinnon, Lieut. H. Mason, Lieut. D. M. Rawcliffe, Sec. Lieut. H. H. Rofe, Lieut. G. F. Robertson; Feb. 26. Lieut. C. D. Bennett, Lieut. R. G. Bennett, Lieut. F. E. C. Benstead, Lieut. R. Chalmers, Lieut. W. Jaffray, Lieut. C. F. Johnson, Sec. Lieut. A. V. Redwood, Sec. Lieut. H. H. Reeves, Lieut. E. C. Rogers; Feb. 27. Lieut. G. R. Baynton, Lieut. F. C. Harrison, Lieut. (actg. Capt.) S. W. Highwood, Lieut. A. G. Keorner, Sec. Lieut. L. T. Rennie, Sec. Lieut. H. E. Roenisch; Feb. 28. Sec. Lieut. F. Allen, Lieut. G. W. P. Avery, Lieut. F. Barrie, Lieut. F. S. Coghill, Lieut. G. H. Collis, Lieut. O. Darlington, Sec. Lieut. A. C. Faulkner, Lieut. N. E. Gwyer, Lieut. W. A. Hallgren, Sec. Lieut. H. H. Hanford, Lieut. G. T.

Harker, Capt. R. E. V. Jelfie, Lieut. J. G. Kerr, Capt. C. McNicoll, D.S.C., Lieut. W. J. Pierce (L'pool R.), Lieut. H. Pughe-Evans (Welsh R.); March 1. Sec. Lieut. L. F. Ashley, Lieut. W. L. Andrew, Lieut. W. Birch, Capt. F. C. B. Douglas, Sec. Lieut. R. F. J. Doole, Lieut. K. G. H. R. Gunn, Sec. Lieut. J. W. Garratt, Capt. W. L. Hay, Lieut. T. G. Jackson, Lieut. C. W. Lane; March 2. Lieut. R. B. Beevor, Sec. Lieut. F. Dixon, Lieut. (Hon. Capt.) R. E. B. Hunt, Lieut. C. U. T. Jellings; March 3. Sec. Lieut. E. O. W. Ayles, Lieut. V. C. Blackmore, Sec. Lieut. R. F. Chapman, Sec. Lieut. M. R. De Mieghe, Lieut. C. R. Dougall, Lieut. W. Dobson, Sec. Lieut. W. S. Emmott, Sec. Lieut. C. M. Fraser, Capt. W. E. Foster, Sec. Lieut. J. Franklin, Capt. R. B. Frame, Sec. Lieut. N. F. Frome, Sec. Lieut. M. Gardiner, Lieut. A. S. Hanna, Lieut. W. A. Hughes, Sec. Lieut. W. U. Jackson, Sec. Lieut. R. D. O'Neill, Sec. Lieut. D. A. Watts, Lieut. H. Wind, Lieut. R. Watson; March 4. Lieut. B. S. Alexander, Sec. Lieut. S. F. Blackwell, Lieut. (actg. Capt.) A. Beck, Sec. Lieut. J. A. Callaghan, Lieut. V. C. Coombs, Sec. Lieut. C. G. Haigh, D.F.C., Lieut. C. W. Hayne, Lieut. J. P. Huins, Lieut. H. M. Hames, Capt. R. W. Hall, M.C., Lieut. J. E. Storey, Sec. Lieut. G. J. Teather; March. Lieut. L. K. Baker, D.F.C., Lieut. S. J. Chamberlain, D.F.C., Lieut. J. G. Crang, Lieut. S. J. Davies, Sec. Lieut. P. W. Evans, Lieut. H. F. Faulkner, Sec. Lieut. B. H. Filkins, Lieut. C. B. Fisher, Lieut. F. R. Gollop (Manc. R., T.F.), Capt. P. H. Hepburn, Sec. Lieut. R. G. Harris, Lieut. T. E. Hearn, Sec. Lieut. C. O. L. Jones, Lieut. E. R. Jones, Lieut. (Hon. Capt.) M. B. Knowles, Sec. Lieut. E. R. Stockport, Lieut. D. F. Taber, Sec. Lieut. G. E. S. Thompson; March 6. Lieut. C. F. Ash, Lieut. K. W. Bransby, Sec. Lieut. W. Cameron, Sec. Lieut. E. G. Corey, Lieut. (actg. Capt.) F. A. V. Cook (Dur. L.I., T.F.), Sec. Lieut. G. Davies, Maj. F. T. Digby, D.S.O., Sec. Lieut. J. L. Davies, Lieut. R. J. Findlay, Lieut. R. Foster, Lieut. D. G. George, Sec. Lieut. C. W. Gracey, Maj. E. D. Horsfall, Lieut. A. S. Hett, Sec. Lieut. C. E. Jones, Lieut. E. C. H. Jones, Sec. Lieut. F. V. Riley; March 7. Sec. Lieut. H. J. W. Alexander, Sec. Lieut. D. J. Avery, Lieut. E. D. Dalmaine, Sec. Lieut. L. Duncombe, Lieut. R. H. Dunlop, Lieut. R. O. Ellis, Lieut. L. B. Felton, Sec. Lieut. E. W. Foster, Sec. Lieut. E. Grimshaw, Sec. Lieut. F. Hamilton, Lieut. H. Hartley, Sec. Lieut. J. W. Haynes, Lieut. V. T. Harwood, Sec. Lieut. J. R. Hill, Lieut. T. R. V. Hill, Sec. Lieut. F. H. Kay, Sec. Lieut. W. W. Pritchard, Sec. Lieut. J. O. Smith, Lieut. E. G. Thomas, Lieut. G. F. Warner; March 8. Sec. Lieut. B. W. H. Arnold, Lieut. J. E. Bennett, Lieut. H. P. Blakely, Sec. Lieut. A. J. Broadberry, Sec. Lieut. P. H. Dixon, Sec. Lieut. D. P. Davies, Lieut. W. O. T. Tudor-Hart, Capt. S. W. Thompson, Sec. Lieut. B. Turner, Sec. Lieut. F. H. Thirkell, Sec. Lieut. W. H. Thornton, Lieut. R. Walsley, Lieut. J. K. Watson; March 9. Maj. F. W. K. Davies, Sec. Lieut. J. R. Hill, Sec. Lieut. H. C. Shearman; March 10. Lieut. (actg. Capt.) C. P. Allen, Sec. Lieut. F. E. Birkett, Lieut. H. Cartwright, Lieut. F. H. Dormer, Lieut. W. J. Downie, Sec. Lieut. M. Dean, Lieut. W. P. Doyle, Lieut. C. S. Emery, Lieut. A. Hughes, Sec. Lieut. W. A. Harris, Sec. Lieut. J. S. Hall, Sec. Lieut. E. Heyes, Lieut. F. T. Jackson, Sec. Lieut. L. V. Russell, Sec. Lieut. (Hon. Lieut.) M. C. Tozer, Sec. Lieut. C. J. M. Turner, Sec. Lieut. E. T. Wales, Sec. Lieut. J. S. Walthall; March 11.

Sec. Lieut. W. Anderson, Lieut. G. D. Dodds (Durh. L.I.), Sec. Lieut. C. M. Donald, Lieut. F. W. Dolman, Sec. Lieut. S. Dennis, Lieut. R. T. Freeman, Sec. Lieut. K. Field, Sec. Lieut. W. H. Herd, Sec. Lieut. (Hon. Lieut.) R. U. Hamilton, Lieut. (actg. Capt.) R. Manzer, D.F.C.; March 12. Lieut. C. Bettinson, Sec. Lieut. E. Cotton, Sec. Lieut. F. E. J. Davis, Sec. Lieut. J. W. Davies, Lieut. R. J. G. Davis, Lieut. H. Dean, Lieut. T. C. Danby, Lieut. F. J. Davey, Capt. G. Fox-Rule, Sec. Lieut. G. E. McKenzie, Lieut. E. Tasker, D.F.C., Lieut. E. Walker, Sec. Lieut. D. C. Watson; March 13. Sec. Lieut. J. Andrews, Lieut. C. C. Allinson, Sec. Lieut. C. K. David, Sec. Lieut. A. Demorest, Sec. Lieut. J. B. Friend, Sec. Lieut. A. R. Green, Sec. Lieut. J. Hinchey, Sec. Lieut. D. F. Harrison, Sec. Lieut. J. Hart, Sec. Lieut. C. L. Lowe, Lieut. C. L. Roberts, Sec. Lieut. C. Stuart, Sec. Lieut. (Hon. Lieut.) R. Turner, Lieut. A. J. Tyler; March 14. Capt. J. W. Alcock, Sec. Lieut. E. R. Airey, Lieut. R. M. Darney, Sec. Lieut. A. S. Evans, Sec. Lieut. I. O. Pugh, Sec. Lieut. J. C. Regester, Sec. Lieut. H. H. Robbins, Lieut. G. Rose, Lieut. W. B. T. Ross, Lieut. L. T. Smith, Lieut. D. R. Snellgrove, Sec. Lieut. (Hon. Lieut.) F. S. Tooley; March 15. Lieut. (actg. Capt.) P. Ainsworth, Sec. Lieut. G. J. Dickens, Sec. Lieut. O. S. Parker, Lieut. H. T. Roper; March 16. Lieut. H. G. S. Broad, Sec. Lieut. A. E. Hart, Sec. Lieut. S. S. Rosenheim, Sec. Lieut. J. E. G. Robinson, Sec. Lieut. H. Townley, Sec. Lieut. M. Thompson, Sec. Lieut. R. Watson; March 17. Capt. O. M. Baldwin, D.F.C., Sec. Lieut. E. W. C. Densham, Lieut. R. C. Richards, Sec. Lieut. C. Robson, Sec. Lieut. L. J. Spence, Lieut. G. L. Smart; March 18. Sec. Lieut. A. C. Davern, Lieut. G. H. B. Richards (R. Highrs., T.F.), Lieut. R. L. Roe, Capt. A. Sparrow, A.F.C., Capt. (Hon. Maj.) E. C. Stonehouse, Lieut. G. E. Taylor; March 19. Lieut. H. Tatton; March 25.

Capt. R. S. S. Brown, M.C., relinquishes his commn. on account of ill-health caused by wounds, and is permitted to retain his rank; March 29. Lieut. M. Andrews relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 29. Sec. Lieut. V. T. Lloyd-Davies relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 29.

The notification in *Gazette* Nov. 1, 1918, concerning Sec. Lieut. J. M. Bacon is cancelled.

Administrative Branch

Capt. (Hon. Maj.) W. B. Crossley to be actg. Maj. whilst employed as Maj., from (A.); Oct. 21, 1918.

Lieuts. to be actg. Capts. whilst employed as Capts.:—J. W. Langmuir, from (A.); July 1, 1918. C. A. Howe; Nov. 4, 1918. J. C. Cantrill; March 20.

Sec. Lieut. (actg. Lieut.) A. H. Jones to be actg. Capt. whilst employed as Capt.; Nov. 1, 1918.

Lieuts. (A.) to be Lieuts.:—O. Thamer; Jan. 23. E. N. MacDonald; Jan. 31. (Actg. Capt.) R. T. Jones, D.F.C.; Feb. 6 and relinquishes the actg. rank of Capt.

Lieuts. to be Lieuts.:—C. Watson, from (O.); Nov. 1, 1918. A. S. Mills, from (O.); Feb. 18. W. K. Prendergast, from (A. and S.); Feb. 22. E. A. de Sain, from (S.O.); March 15.

Sec. Lieut. A. E. Marks to be Lieut.; Aug. 6, 1918. Sec. Lieuts. to be actg. Lieuts. whilst employed as Lieuts.:—R. P. Briscoe June 26, 1918; T. Surr.; Sept. 26, 1918. F. W. Johnson; Nov. 1, 1918. C. St. J. Vaughan; Dec. 13, 1918.

Sec. Lieuts. to be Sec. Lieuts. from (A.):—(Hon. Lieut.) A. W. Allan; June 4, 1918, and to be Hon. Lieut. J. A. Shipton; Jan. 31.

Sec. Lieuts. to be Sec. Lieuts. from (O.):—E. Singleton; Feb. 10. S. F. Blackwell; Feb. 21. A. B. Henderson; March 21.

Sec. Lieut. L. M. Britten to be Sec. Lieut., from (T.); March 1. (Substituted for notification in *Gazette* Feb. 28.)

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. D. T. McGuire (Lieut., Glouc. R.); Jan. 12. Capt. A. H. Brucker (Capt., Oxf. and Bucks L.I., T.F.); Jan. 18.

The following are transfd. to Unemployed List:—Lieut. (Hon. Capt.) J. H. Menzies; Jan. 5. Sec. Lieut. W. J. Gallard; Jan. 17. Lieut. (actg. Capt.) N. B. Morphy; Jan. 20. Sec. Lieut. W. A. Malcolm, Lieut. P. H. G. Southwell; Jan. 22. Sec. Lieut. F. W. Carr, Lieut. C. F. Cowper; Jan. 23. Sec. Lieut. D. A. Boulton, Sec. Lieut. F. G. Cartman, Sec. Lieut. T. S. Millar; Jan. 25. Sec. Lieut. R. Sharrock, Sec. Lieut. D. C. Thomas; Jan. 26.

Capt. E. Edwards, Lieut. J. W. Jackson; Jan. 28. Sec. Lieut. C. C. L. Marconi; Jan. 29. Sec. Lieut. J. J. Evans; Jan. 31. Capt. G. H. Watts; Feb. 1. Lieut. G. J. Frost; Feb. 2. Lieut. E. A. Bastow, Lieut. G. Feeny; Feb. 3. Sec. Lieut. J. W. Hill, Sec. Lieut. P. M. Macnair; Feb. 4. Sec. Lieut. C. W. Gordon, Sec. Lieut. R. C. Smith, Lieut. (actg. Capt.) W. Topham; Feb. 5. Lieut. W. D. Kennard; Feb. 7. Lieut. W. Hurst-Barnes, Sec. Lieut. C. Moss, Sec. Lieut. H. Rodgers; Feb. 8. Capt. J. L. Lewis; Feb. 9. Lieut. C. W. B. Colling, Lieut.-Col. (actg. Col.) V. Henry, Lieut. P. G. Matthews; Feb. 12. Lieut. W. L. Coleridge, Lieut. H. C. G. Watney; Feb. 13. Lieut. A. Miller; Feb. 14. Lieut. A. H. K. Jones, Sec. Lieut. (Hon. Lieut.) (actg. Lieut.) R. F. Messervy; Feb. 15. Sec. Lieut. C. H. Kendall; Feb. 16. Sec. Lieut. A. P. Manners; Feb. 18. Lieut. S. Canning, Sec. Lieut. S. R. Dickson; Feb. 19. Lieut. W. W. Legg (R.F.A., S.R.); Feb. 20. Sec. Lieut. E. Deekss, Sec. Lieut. G. M. Gray; Feb. 21. Sec. Lieut. E. B. Appleby, Lieut. V. W. Hatton, Sec. Lieut. W. R. Jackson, Lieut. A. H. Read; Feb. 23. Sec. Lieut. W. C. Albery, Sec. Lieut. C. N. S. Burns, Lieut. G. Johnstone; Feb. 26. Lieut. L. W. Elledge, Lieut. (actg. Capt.) A. McIntosh (Lieut., K.O.S.B.), Sec. Lieut. B. Rose, Sec. Lieut. V. H. Richardson, Sec. Lieut. J. A. B. Young; Feb. 27. Sec. Lieut. J. A. Black, Lieut. G. P. Cohn, Lieut.-Col. J. Harvey, Sec. Lieut. I. I. Jones, Lieut. C. C. Matthews; Feb. 28. Sec. Lieut. (Hon. Lieut.) J. C. Bain, Lieut. P. W. Dyke, Lieut. J. V. L. Hall; March 1. Sec. Lieut. L. G. Coxhead, Sec. Lieut. R. C. Dickinson, Sec. Lieut. A. F. Lawry, Sec. Lieut. W. G. Stephens; March 4. Sec. Lieut. C. Campbell; March 5. Sec. Lieut. F. A. George, Sec. Lieut. A. Farrar; March 6. Capt. H. Duveen, Lieut. F. A. George, Sec. Lieut. E. J. Harris, Sec. Lieut. J. Horton, Lieut. H. O. Samson; March 7. Sec. Lieut. R. W. Simpson; March 8. Sec. Lieut. T. Cunliffe, Lieut. G. H. Johnson, Sec. Lieut. J. B. Kettle, Maj. L. G. Hazlerigg, Sec. Lieut. C. W. A. T. Dickinson, Capt. T. M. Gerrard; March 13. Sec. Lieut. G. V. Jennings, Lieut. T. A. Loveridge, Capt. A. B. Walters; March 14. Lieut.-Col. C. M. Daniel, Lieut. (actg. Capt.) F. W. Romney; March 15. Sec. Lieut. W. S. Scott; March 17. Sec. Lieut. R. A. Stuart, Sec. Lieut. A. A. Tabor; March 18. Sec. Lieut. W. Tunnicliffe, Sec. Lieut. P. P. Thornton; March 19. Lieut. (actg. Capt.) J. A. Stevenson, M.C.; March 20. Sec. Lieut. H. Randall; March 28.

Lieut. (actg. Capt.) W. H. T. Collings relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain the rank of Capt.; Nov. 27, 1918 (substituted for notification in *Gazette* Nov. 26, 1918).

Capt. L. E. Eeman relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; Feb. 12 (substituted for notification in *Gazette* Feb. 11).

Lieut. G. Davidson relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 29.

The surname of Sec. Lieut. D. A. Boulton is as now described, and not as stated in *Gazette* Oct. 29, 1918.

The surname of Sec. Lieut. R. H. Mullens is as now described, and not as stated in *Gazette*, Feb. 7.

Technical Branch

Capt. J. S. Wheelwright, D.S.C., to be actg. Maj. while employed as Maj. (Grade A) from A. and S.; July 18.

G. S. M. Taylor (Capt., R.E.) is granted a temp. commn. as Capt. (Grade A.); April 1, 1918.

Capt. G. L. Watson to be Capt. (Grade B), from (Ad.); Aug. 15, 1918.

Lieut. (Hon. Capt.) S. Smith to be actg. Capt. while employed as Capt. (Grade A.); Dec. 1, 1918.

Sec. Lieut. (actg. Capt.) A. J. Bright retains the actg. rank of Capt. while employed as Capt. (Grade B), from (Ad.); Oct. 1, 1918.

Sec. Lieut. (actg. Lieut.) G. J. Stroud, M.B.E., to be actg. Capt. while employed as Capt. (Grade A.); Oct. 1, 1918.

Lieut. H. Stansfield to be actg. Capt. while employed as Capt. (Grade B) from (O.); Nov. 2, 1918.

Sec. Lieut. (actg. Capt.) J. I. Thompson to be Lieut.; Aug. 9, 1918, and to retain the actg. rank of Capt.

Lieuts. to be Lieuts. (Grade B), from (Ad.):—L. T. G. Jefferson; Nov. 13, 1918 (substituted for notification in *Gazette*, Dec. 13, 1918). J. T. Titmas; March 20.

Sec. Lieuts. to be actg. Lieuts. while employed as Lieuts. (Grade A.):—G. J. Stroud, M.B.E.; April 1, 1918. C. W. Whitworth, from (Ad.); Sept. 1, 1918.

Sec. Lieuts. (Hon. Lieuts.) to be actg. Lieuts. while employed as Lieuts. (Grade B):—E. A. Bradshaw, J. C. Snelgrove; April 1, 1918. P. Rourke; July 1, 1918. F. J. Magee; Nov. 1, 1918.

Sec. Lieuts. to be Sec. Lieuts. (Grade B), from (Ad.) (substituted for notification in the *Gazette*, March 18):—C. H. Bunn; Dec. 1, 1918. J. L. Ingham, F. H. Swofor, J. Tunbridge; Jan. 4. C. E. Easton; Jan. 14. L. J. Slack; Jan. 18. C. M. Byham; Jan. 28. G. H. Stanley; Feb. 25. H. S. Smith; March 5.

Sec. Lieut. (Hon. Lieut.) A. W. Allan to be Sec. Lieut., from (Ad.), and to be Hon. Lieut.; Aug. 11, 1918.

Sec. Lieut. J. T. Brown to be Sec. Lieut. (Grade A), from (Ad.); Feb. 1. Sec. Lieut. J. W. Thompson (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (Grade A); Oct. 25, 1918.

Sec. Lieut. F. Fogg to be Sec. Lieut. (Grade B), from (Ad.); Jan. 31.

J. Johnstone (Lieut., Som. L.I.) is granted a temp. commn. as Sec. Lieut. (Grade B) (Nov. 1, 1918, seny. April 1, 1918, and to be Hon. Lieut.) (substituted for notification in *Gazette* Feb. 18).

Capt. C. Horsfield relinquishes his commission on ceasing to be employed; March 1.

The following are transfd. to Unemployed List:—Sec. Lieut. P. S. Beaufort; Jan. 10. Lieut. (actg. Capt.) R. W. Mitchell; Jan. 12. Sec. Lieut. H. R. Moffatt; Jan. 14. Sec. Lieut. (Hon. Lieut.) N. W. Watson; Jan. 19. Lieut. Hon. H. G. H. Mulholland, Lieut. D. Warnford-Davis; Jan. 25. Lieut. J. H. Dickson; Jan. 26. Sec. Lieut. F. H. Jones; Jan. 28. Sec. Lieut. C. G. Ellis, Maj. T. L. Oliver, Lieut. M. Proctor-Gregg (N. Lanc. R.); Jan. 29. Maj. H. Dobell, Capt. B. G. Ludlow; Jan. 30. Sec. Lieut. A. Campbell, Lieut. V. L. Fielder, Lieut. M. A. Millar, Sec. Lieut. (Hon. Lieut.)

J. Murch; Jan. 31. Sec. Lieut. (actg. Lieut.) R. Hall, Lieut. L. C. Kemp; Feb. 1. Sec. Lieut. T. Conlan; Feb. 4. Sec. Lieut. H. A. Chayman, Sec. Lieut. P. Coombs, M.B.E.; Feb. 6. Capt. A. H. Davies, Sec. Lieut. H. G. Wallis; Feb. 7. Capt. M. F. W. Sampson, Lieut. W. J. Walferd; Feb. 8. Lieut. H. S. G. Jamieson (E. Surr. R.), Lieut. J. M. Scott; Feb. 9. Lieut. T. Cooper; Feb. 10. Sec. Lieut. (Hon. Lieut.) G. McDonald, Sec. Lieut. S. Warburton, Lieut. R. Warner; Feb. 11. Lieut. P. Avery, Sec. Lieut. (Hon. Lieut.) P. Allden, Lieut. C. L. Lambert (Lond. R., T.F.), Lieut. W. Waller; Feb. 13. Lieut. J. W. Atkinson, Sec. Lieut. J. T. Baugh; Feb. 14. Lieut. (Hon. Capt.) K. G. de Jongh (Hamp. R.), Capt. N. Martin, Capt. E. W. Walford; Feb. 15. Lieut. L. W. Wethered; Feb. 17. Lieut. E. R. Atkinson, Sec. Lieut. (Hon. Lieut.) A. J. D. Henry (R.F.A.), Sec. Lieut. S. Kendall, Capt. C. G. McCann; Feb. 18. Capt. S. C. H. Davis, Sec. Lieut. (Hon. Lieut.) C. Keith; Feb. 19. Sec. Lieut. J. H. Jones, Lieut. (actg. Capt.) F. H. M. MacIntyre, Sec. Lieut. A. Matthews; Feb. 20. Capt. W. G. Aston, Lieut. L. F. Bishop, Sec. Lieut. (actg. Capt.) W. H. D. Chamberlain, Sec. Lieut. B. E. Harris, Lieut. B. S. Higgs, Capt. (actg. Maj.) H. W. Mills, Sec. Lieut. J. Marra; Feb. 22. Lieut. S. F. Barton, Sec. Lieut. (Hon. Lieut.) H. G. Hall, Lieut. W. H. Jones, Lieut. R. N. Rowell; Feb. 23. Sec. Lieut. A. J. Barnes; Feb. 24. Maj. F. R. E. Davis, Sec. Lieut. R. E. H. Heenan, Lieut. (actg. Capt.) W. L. Hill, Capt. J. Richmond, Lieut. J. Watson; Feb. 25. Sec. Lieut. W. Foster, Sec. Lieut. R. A. Leahy; Feb. 26. Capt. H. M. Edwards, Capt. B. Elliott, Lieut. B. V. N. Rowcroft; Feb. 28. Lieut. J. E. Jones, Sec. Lieut. T. M. F. Tamblin-Watts; March 1. Lieut. B. E. C. Davis, Sec. Lieut. E. Hattemore, Sec. Lieut. B. F. Warburton; March 2. Lieut. (actg. Capt.) R. M. Armfield, Sec. Lieut. (actg. Lieut.) E. S. H. Corbett, Lieut. V. B. Learoyd; March 4. Sec. Lieut. F. Cade, Sec. Lieut. H. S. Downs, Lieut. D. W. Dron, Capt. R. Donald, Sec. Lieut. A. E. Firth, Capt. J. W. Griffith, Sec. Lieut. H. T. Savage; March 5. Sec. Lieut. D. O. Cochrane, Capt. J. B. Crabbs, Sec. Lieut. H. L. Doherty, Sec. Lieut. G. R. Hanson; March 6. Lieut. D. Dougall, Capt. W. J. F. Dutton, Capt. A. B. Hatton, Sec. Lieut. S. E. Knight, Lieut. W. J. Watts; March 7. Sec. Lieut. J. A. Atkinson, Lieut. R. W. Anderson, Lieut. B. V. Brown, Sec. Lieut. C. G. Foster, Sec. Lieut. (Hon. Lieut.) G. W. Robinson, Lieut. E. H. Watson, Sec. Lieut. C. W. Waitt; March 8. Sec. Lieut. F. Dugdale, Lieut. J. P. White; March 9. Maj. R. Waddell; March 10. Lieut. H. L. Billington, Lieut. Hon. F. S. G. Calthorpe, Capt. P. J. Jones, Sec. Lieut. J. Keyte, Lieut. R. Knott; March 11. Lieut. (actg. Capt.) M. A. Chappell, Sec. Lieut. (Hon. Lieut.) (actg. Capt.) A. L. Cockburn, Sec. Lieut. A. T. Griffith, Sec. Lieut. A. Randle; March 12. Sec. Lieut. F. S. Armbrister, Capt. A. C. Baker, Lieut. F. A. Thomas; March 13. Sec. Lieut. H. C. Bell, Lieut. W. E. Bousfield, Capt. G. E. Johnson, Sec. Lieut. H. A. Kelly, Sec. Lieut. P. E. Towler, Sec. Lieut. E. F. Warner, Lieut. H. E. Ward; March 14. Sec. Lieut. (Hon. Lieut.) S. G. Hewitt, Lieut. J. B. Roth; March 15. Lieut. A. C. B. Hanbury, Sec. Lieut. P. C. Martin; March 16. Sec. Lieut. G. S. Adams, Lieut. B. Humphrey, Capt. M. F. L. Selby; March 18. Maj. G. H. Abell; March 19. Maj. (actg. Lieut.-Col.) E. W. Stedman; March 21.

Capt. S. N. Cooke relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; March 29.

The notification in *Gazette* Dec. 17, 1918, concerning Lieut. (actg. Maj.) H. Stansfield is cancelled.

The notification in *Gazette* Jan. 31 concerning Lieut. J. W. Thomson is cancelled.

Medical Branch

The following are transfd. to Unemployed List:—Lieut. W. A. Coopez; Jan. 24. Capt. W. A. Simpson; Feb. 4. Capt. E. P. Carmody; Feb. 11. Lieut. H. McP. Cargin; Feb. 12. Capt. H. R. Carter, Capt. (actg. Maj.) L. Hopper; Feb. 22. Capt. J. P. J. Hart, Capt. J. P. Walker, M.B.E.; March 1. Lieut. R. Malcolm; March 4. Capt. B. E. Annoot; March 13.

The date of relinquishment of his commn. of Capt. H. Greenwood is Jan. 19, and not as stated in *Gazette* Jan. 21.

Dental Branch

Capt. T. F. Healey is transfd. to Unemployed List; Feb. 27.

Physical Training Branch

Capt. (actg. Maj.) B. T. Metcalfe is transfd. to Unemployed List; Feb. 16.

Chaplains' Branch

The following temporary appointments are made:—
Principal Chaplains for Presbyterians.—Rev. W. Moffat (A.C.D.) is granted a temp. commn. as Chaplain with the relative rank of Capt., and is granted the relative rank of Col. whilst employed as Principal Chaplain; Jan. 1 (substituted for notification in the *Gazette*, Feb. 4).

Assistant Principal Chaplain for United Board.—Rev. J. Firth, M.C. (Chaplain, 4th Class, A.C.D.), is granted a temp. commn. as Chaplain, with the relative rank of Capt., and is granted the relative rank of Maj. whilst employed as Assistant Principal Chaplain; Feb. 28.

Capt. W. G. Carpenter is transfd. to Unemployed List; March 7.

Memoranda

Capt. F. J. Hooper is confirmed in the rank of Capt.
Sec. Lieut. (actg. Lieut.) J. W. Hutwaite to be Lieut.; March 16.
The following are transfd. to Unemployed List, from (S.O.):—Capt. T. L. Tillie (Sec. Rif., T.F.); Jan. 19. Capt. A. W. Dods; Feb. 14. Maj. (actg. Lieut.-Col.) Visct. G. M. G. F. H. Maidstone, D.S.C.; Feb. 16. Capt. (actg. Lieut.-Col.) B. J. Wolle-Barry; Feb. 28. Capt. (actg. Lieut.-Col.) J. F. Hawkins, O.B.E.; March 1. Sec. Lieut. (actg. Capt.) R. Hely; March 5. Maj. K. T. Dowding, Capt. P. M. Davson, Lieut. (actg. Capt.) H. Fletcher; March 13. Sec. Lieut. (actg. Lieut.) (Hon. Capt.) A. H. Fynn; March 17. Maj. M. H. P. Allen; March 18. Capt. A. E. Hartley; March 24.

Royal Flying Corps (Military Wing).

Flying Officers.—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—J. K. Stewart; Feb. 2, 1918. E. C. Pickwood; Feb. 16, 1918. P. B. Stockton; March 4, 1918. J. M. Bacon, D. K. Winton; March 6, 1918. J. L. Grant, R. E. Baxter; March 7, 1918. J. N. Kavanagh; March 8, 1918. P. Messenger, R. J. Burley; March 9, 1918. W. G. Foster; March 11, 1918. B. S. Eyttinge, H. O. Warren; March 12, 1918.



ROLL OF HONOUR

Published March 18

Killed

Mackenzie, Lieut. D., M.M. (Can. F.A.).

Published March 20

Died

A. P. Matheson, Lieut., R.F.C.

Published March 24

Killed

Downe, Sec. Lieut. C. L.
Heron, Sec. Lieut. W. F.

Marchant, Lieut. C. H.

Died

Baird, Lieut. D. D.
Earll, Sec. Lieut. H.
Hill, Lieut. S. N.
McDonald, Sec. Lieut. J. A.

Percival, Lieut. E. E.
Richardson, Lieut. A. D.

REPATRIATED

Published March 26

The following released prisoner from Germany has arrived in England:—

Reeves, Sec. Lieut. W. A.

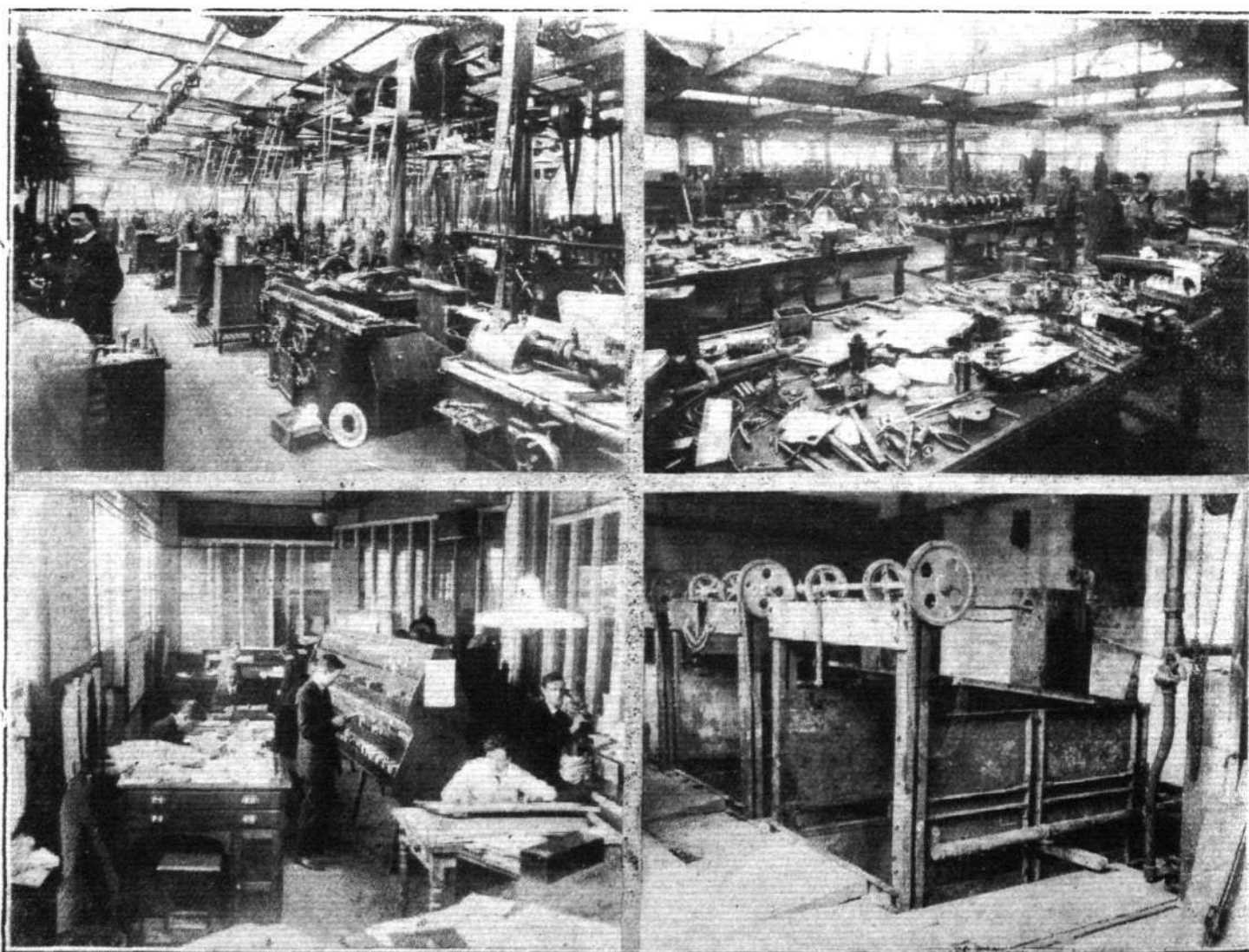
THE NEW HOME OF THE A.B.C.'S— AND OTHER THINGS

It is now some time since it was first announced that the Selsdon Engineering Co., Ltd., of 1, Albemarle Street, W. 1, had been appointed sole British manufacturers of the A.B.C. aero engines, and had been authorised to sell engines and obtain orders on behalf of the designers of these engines, Messrs. Walton Motors, Ltd. As both the "Gnat" and "Wasp" engines are of such type and power as to appeal to constructors of post-War aeroplanes for sporting, instructional and similar purposes, this announcement has been received with general interest as indicating that these famous aero engines will be available commercially as soon as circumstances permit. It may be taken for granted that Mr. Granville Bradshaw, the designer of the A.B.C. engines, is guarding carefully the reputation and future of his designs, and that he would naturally use discrimination in his selection of the firm that is to be responsible for their commercial production under peace conditions. That the manner in which the engines are built and marketed will have a decided influence upon the success or otherwise of the undertaking is too obvious to need enlarging upon here, and, knowing the Selsdon firm, we need only say that so far as we can see, there can be no doubt about the wisdom of the choice made.

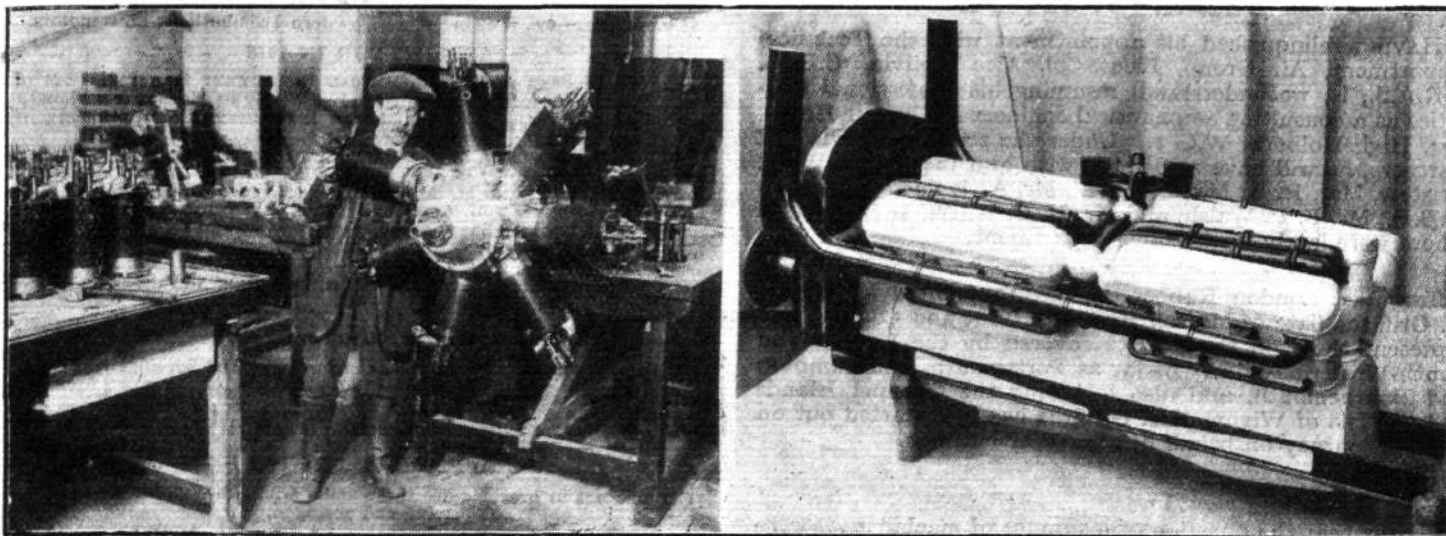
The policy persistently pursued by the Selsdon Engineering Co., Ltd., during the War has been to tackle any job that came along, no matter how intricate, when it would often have been so much easier to take the line of least resistance and select work that offered better prospects in the way of larger output and greater profits. This, however, is not the way of Mr. G. Campling, managing director of the Selsdon firm, who had his reputation to make, and

chose to make it as a thoroughly sound engineer rather than as a—financially—successful producer of articles that required little engineering skill. Incidentally, Mr. Campling has, by concentrating on the former, and succeeding, also made a success of the financial aspect, as the growth of the firm amply proves. Furthermore, by following this policy the Selsdon firm has built up an excellent reputation for good workmanship and general engineering excellence, which will establish them solidly in the aircraft industry where another and less strenuous policy might easily have resulted in the coincidence of the end of the firm and the termination of hostilities.

When the War broke out in 1914 the Selsdon Engineering Co., Ltd., had just started in quite a small way as a garage at No. 1, Brighton Road, Croydon, and as this was Mr. Campling's first independent venture the general unrest which naturally followed the outbreak of hostilities threatened for a time to put a quick stop to his enterprise. However, he soon saw that this was to be an engineer's War, and in this opinion he was supported by his colleague, Mr. R. Brown, an engineer of many years' standing, who is now, by the way, in charge of aero engine sales. The result was that the firm decided to "carry on." It was not long before the garage side of the business began to decrease, but this was more than made up for by the other classes of work coming in. Thus there were contracts from the Government in connection with submarine engines, followed later by a quantity of fuse work. All the time those responsible for the management of the firm realised that aviation was going to play an important part in determining the issue of the World-War, and the opportunity to enter the aircraft industry came



AT THE SELSDON WORKS, CROYDON.—The photograph in the top left-hand corner shows part of one of the main shops. On the right is a view in the assembly shop where the "Gnats" and "Wasps" are erected. The two bottom views show respectively the planning shop and some of the new hardening furnaces being installed.



AT THE SELSDON WORKS, CROYDON.—On the left is seen a "Wasp" engine being assembled, while on the right is shown a rough model of the new 1,000 h.p. engine that is now being got out by the Selsdon Engineering Company.

when there were a number of Gnome parts to be made, a piece of work requiring the greatest accuracy and care, and one that did not form by any means an easy start for beginners in this class of work. However, Mr. Campling did not hesitate, although well aware of the nature of the work to be tackled, and that he was justified in his faith in the workmen who had to be taught the work was evident from the first batch of parts, which were quite up to standard, and the order was repeated. In the meantime the old works in Brighton Road were rapidly becoming too small, and consequently new premises were secured in Sanderstead Road, Croydon, not without difficulties, which need not, however, be gone into here. As the new works became completed new machinery was installed and some transferred from the old works. At the latter place a speciality was made of the construction of Imber tanks, while the new works got busy on contracts for machine-gun interrupter gears. When it is remembered that the function of these gears is to prevent the machine-guns from being fired while a propeller blade is in line with the gun, it will be understood that this work calls for great precision, and in many instances special tools had to be evolved in order to deal effectively with Kauper-Sopwith and C.C. gears. In this connection it may be mentioned that the Selsdon Engineering Co. has produced practically all the interrupter gears for the "Dragonfly" engines.

Without pretending to give a complete catalogue of all the many and varied jobs that have been undertaken from time to time, it may be pointed out that a large number of de H. pumps (of the windmill or propeller type) have been and are being manufactured. To state that the works are equipped with the most up-to-date machinery for work of precision is really superfluous, since the work already undertaken and that in contemplation could not be tackled otherwise under modern competitive conditions.

This brief history of the Selsdon Engineering Co. brings us up to the present and immediate future. It has already been mentioned that one of the post-War products will be A.B.C. engines. The "Gnat," which is of the two-cylinder-opposed type, has been slightly altered, mainly in regard to the cylinders, which are now of the same dimensions as those of the "Wasp," thereby facilitating production, while at the same time increasing the power of the "Gnat"

to a normal b.h.p. of 45 and a maximum of 50 h.p. For a low-priced sporting aeroplane the "Gnat" should have much to recommend it, since as a type it is simplicity itself, and can be produced at a reasonable figure. Although the selling price has not yet been definitely settled upon, we have been told, approximately, what it will be, and the figure is such as to be certain to appeal to designers of aeroplanes for moderately low power.

As regards the "Wasp," which develops 200 h.p. in its latest form—it has been slightly altered, and will be known as the "Wasp, Mark II"—this engine has, perhaps, a wider scope, since its power is such that it lends itself not only to installing in touring and school 'planes, but also to medium-powered twin or multi-engined passenger and mail carriers. Here again we are not at present at liberty to quote the selling price, but may say that it is reasonable, while at the same time being such that the makers can afford to put into the engine the best, both as regards material and workmanship, thus ensuring the high quality of the engine.

While the Selsdon Engineering Co. is thus engaged upon the construction of "Gnats" and "Wasps," it must not be supposed that this marks the limits of their enterprise. Far from it. To some of the contemplated branches of their activity no reference is permissible at present, but we may venture a whisper concerning a new aero engine of original design which is now being developed, the design being entrusted to Mr. W. Hooper. This engine, a rough model of which is shown in one of the accompanying illustrations, is to be of the "broad arrow" type, and will have twenty-four cylinders arranged in three banks, each bank being in two monobloc castings of four cylinders. The photograph of the rough model, although being, perhaps, somewhat deficient in detail, shows very well the compact design. The new engine is estimated to develop about 1,000 h.p., and should, once it has passed the experimental stage, be a fitting power plant for the large commercial aeroplanes and seaplanes of the future.

In conclusion, we would urge aeroplane constructors contemplating post-War designs not to omit making enquiries to Mr. R. Brown, of the Selsdon Engineering Co., 1, Albemarle Street, who will always be glad to give further particulars of the aero engines.

Demobilised Airmen's Clothes

THE Secretary of the Air Ministry announces that in future the return of greatcoats by demobilised airmen will be optional. An airman may either retain his greatcoat and forfeit £1 of his war gratuity, or he may return the greatcoat through a railway company not later than the last day of his demobilisation furlough and receive £1 in cash. Airmen who retain their greatcoats must remove shoulder straps, Service buttons, and badges of rank. They will not then be liable to legal proceedings. Retained greatcoats may be dyed. Owing to the temporary dearth of materials, it will not be possible to forward within 28 days a civilian suit to every airman who has elected to take plain clothes in lieu of £2 12s. 6d. In cases where delay in delivery occurs the airman

will be notified, and will be given the option of waiting for a suit or of receiving £2 12s. 6d. in lieu. An airman who has any complaint regarding non-receipt of plain clothes after 28 days from date of dispersal, or regarding misfit, should write, giving Air Force number, rank, name, and unit, and, in case of misfit, correct measurements, to the Officer in Charge, Discharged Soldiers' Clothing Section, Battersea Park, S.W. 11, who will inquire into the circumstances and communicate with the airman. No man is permitted to wear uniform on expiration of his 28 days' furlough. Khaki clothes may, however, be worn, provided shoulder straps, Service buttons, and badges have been removed. In this case the field service cap will not be worn. Khaki worn for civilian purposes may be dyed.

SIDE-WINDS

HAVING relinquished his appointment with the Technical Department, Air Group, Lieut.-Col. Alec Ogilvie, C.B.E., F.R.A.S., is, we understand, resuming his professional activities as a consulting aeronautical engineer at Gwydir House, 104, High Holborn, W.C. 1. Under the style of Ogilvie and Partners, he will have associated with him Lieut.-Col. W. A. Bristow, Maj. R. H. Mayo, O.B.E., Mr. A. J. Sutton Pippard, M.B.E., Mr. F. P. Walsh, and Mr. H. C. Watts, M.B.E., all of whom were lately in the same department.

THE East London Rubber Co. have appointed Mr. Frank H. Griffiths (late of Messrs. Bransom Kent and Co., Ltd.) to represent them on the district covered by the London and South-Western Railway as far as Portsmouth, Southampton and Bournemouth, and also including the Channel Islands and the Isle of Wight. Mr. Griffiths has just started out on his first journey on behalf of after-War business.

Aerial Insurance

Now that the question of insurance of machines, passengers, pilots, goods, etc., is so very much to the fore, we shall be pleased to receive enquiries from companies or individuals interested in the subject, with a view to arranging rates, etc., under Lloyd's policies. Enquiries should be addressed to F. King, Manager, Aerial Insurance Department, 36, Great Queen Street, Kingsway, W.C. 2, who is in a position to quote the lowest market rates.

COMPANY MATTERS

Sunbeam Motor Car Co., Ltd.

A DIVIDEND of 2½ per cent. (6d. per share), free of income tax, on old and new ordinary shares (interim), has been declared, payable 16th prox. Last year, 5 per cent. (on one-half of present ordinary capital).

NEW COMPANIES REGISTERED

BRITANNIA MOTOR SHEET METAL WORKS, LTD.—Capital £200, in £1 shares. Iron and metal founders, motor and general engineers, etc., manufacturers of aeroplanes and parts, etc. First directors: W. S. Parker and J. H. Martin. Solicitor: F. C. S. Squires, 21, St. Helen's Place, E.C.

MOTOR EXCHANGE AND MART, LTD., 30, Highgate Road, N.W.—Capital £10,000, in £1 shares. Manufacturers of and dealers in electric, steam or other motor vehicles, proprietors of self-starters for motor cars and aeroplanes, etc. First director: J. R. Burton.

SOUTHERN COUNTIES GARAGE, LTD., Brighton Road, South Croydon, Surrey.—Capital £20,000, in £1 shares. To enter in an agreement with the Selsdon Aero Engineering Co., Ltd., and to carry on the business of motor vehicle and aeroplane proprietors and dealers, etc. First directors: G. Campling, G. E. Coleman.

TAW MANUFACTURING CO., LTD., 183, King's Cross Road, W.C.—Capital £1,000, in £1 shares. Manufacturers of lamps and accessories for motors, aircraft, etc.

PUBLICATIONS RECEIVED

"At a Glance." Twelve Conversion Tables for International Values of Weights, Measures, etc. By J. E. Slack and A. Dorey. London: The Technical Publishing Co., Ltd., 1, Gough Square, E.C. 4. Price 7s. 6d. net; post free 8s.

Clemenceau: Writer, Citizen, Statesman. By Camille Ducray. London: Hodder and Stoughton. Price 5s. net.

Revue Generale de l'Aeronautique Theorique et Pratique. March, 1919. Paris: Librairie Aeronautique, 40 rue du Seine. Price 2 Fr.

Catalogues.

Armstrong-Whitworth Aircraft. Sir W. G. Armstrong, Whitworth and Co., Ltd., Newcastle-on-Tyne.

Locomotion Aerienne. Sir W. G. Armstrong, Whitworth and Co., Ltd., Newcastle-on-Tyne.

E. R. Calthrop's Patent Safety "Guardian Angel" Parachutes. E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. 2.

Bibliotheca Viatica: Second-Hand Books on the Road, the Rail, the Water and the Air. No. 772. Henry Sotheman and Co., 140, Strand, W.C. 2.

Grahame-White Aircraft: 1919 Type Commercial and Pleasure Machines. The Grahame-White Co., Ltd., The London Aerodrome, Hendon, N.W. 9.

Aeronautical Patents Published

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motor.

APPLIED FOR IN 1915

- 9,100. G. BREWER AND AERONAUTICAL INSTRUMENT CO. Indicators of angle of incidence of the wind relatively to wings of aeroplanes.
- 9,102. A. OGILVIE AND AERONAUTICAL INSTRUMENT CO. Indicators of variation in direction of wind.
- 9,879. F. STADWARD. Clinometers for use on aeroplanes.
- 10,816. H. E. S. HOLT. Aerial illuminating devices.
- 11,827. E. MINSART AND H. DE DROOG. Speedometer for aircraft.
- 12,684. A. R. PETTIT AND MARTINSYDE, LTD. Wire stays for aircraft.
- 12,859. H. L. SHORT. Shackles for aeroplane stay-wires.
- 12,896. C. H. DINWIDDY. Apparatus for determining range and height of aircraft, etc.
- 13,173. J. C. WALKER. Instruments for navigating and directing course of aircraft.

APPLIED FOR IN 1917

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published April 3, 1919

- 12,302. H. EDDE. Motors for aircraft. (109,801.)

APPLIED FOR IN 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published April 3, 1919

- 3,100. W. W. HACKETT AND ACCLES AND POLLOCK. Hinge parts of aeroplane framework. (123,798.)
- 4,154. E. H. T. D'EYNCOURT. Means for starting flight of aeroplanes, etc. (123,833.)
- 7,642. H. O. SHORT. Floating structures for landing, launching or loading hydro-aeroplanes, etc. (123,893.)
- 8,553. L. MASSEY. Spars, struts, longerons, etc., of aeroplanes. (123,902.)
- 9,594. WESTINGHOUSE ELECTRIC AND MANUFACTURING CO. Aeroplanes, etc. (123,910.)

Index and Title Page for Vol. X.

The 8-page Index for Vol. X of "FLIGHT" (January to December, 1918) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 8d. per copy, post free.

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages li, lii, liii, and liv).

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IN order that "FLIGHT" may continue to be published at the usual time, it is now necessary to close for Press earlier. All Advertisement Copy and Blocks must be delivered at the Offices of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, not later than 12 o'clock on Saturday in each week for the following week's issue.

FLIGHT

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